AFWERX

The Air Force

INNOVATION ECOSYSTEM DEVELOPMENT PLAYBOOK

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Introduction

If you're here, you likely don't need to hear about how the private sector has taken over innovation from the government — including from the military — in the last few decades. That point is underscored by the exponential pace of innovation, and the United States' innovation spending compares unfavorably to other nations. You already know all of that, and the need for action has led you here.

Welcome. We hope you're here because you want to know *how*.

If your division, branch, bureau, or office wants to access the best and most innovative ideas, then you'll need to move faster and be easier to work with than the standard *government way* of doing business.

The AFWERX Ecosystem Playbook is loaded with plays designed to prepare your organization to move at the rapid pace innovation requires, enabling you to access the most cutting-edge technologies. They are suggestions; please modify them to fit your needs, and share them far and wide. Every agency is unique, but we hope this playbook provides a good starting point for you to test, experiment, and ultimately access new technologies.

AFWERX is an organization formed in 2017 by the Secretary of the Air Force with the mission to "connect innovators and accelerate results" in the arenas of technology, innovation, and organizational culture. The vision is one of moonshots and shifting the nature of the Air Force. But there wasn't a playbook for it back then. It started as a movement of people inside the Air Force with "top cover" to try new things, experiment and fail, and try again. Since then, they've documented their journey to scale the best ideas and build a "coalition of the willing" to make the day-to-day lives of Airmen better.

2017 AFWERX CHARTER: To pioneer procurement and acquisition pathways for start-up firms and non-traditional entrants to the defense industry.

OBJECTIVES:

▶ Develop and implement capabilities to increase warfighter agility

▶ Unleash Airmen innovation capability

▶ Create and leverage an engaged, expanding ecosystem

TOP COVER: Support from leadership to spend time pursuing an idea.

To foster innovation that makes the greatest impact, our leaders want us to tackle the most pressing readiness and national security challenges. This is one story of how we're going about it.

This playbook is our guidance on shifting culture and processes, working with innovators, and leveraging the innovation ecosystem. These techniques and practices draw from experience won in partnering with over 1,700 startup companies (70% of which were working with the government for the first time) and building a collaborative network of thousands of internal and external stakeholders with a vested interest in partnering. The "plays" are taken from AFWERX strategy and lessons honed along the way. The SBIR program is prominently featured throughout the playbook, but the lessons apply to any process designed to acquire innovative solutions to your goals and challenges.

INNOVATION ECOSYSTEM: All of the large and diverse participants and resources necessary for innovation.

For the Air Force, this includes Airmen, partner/supplier, and public innovation, along with the support organizations, funders, and leaders who grease the wheels. We detail this in our **Five Node Model**, which you'll find explained in The Framework section.

Specifically, startup innovation as defined by the Small Business Administration is, *"Something new or improved, having marketable potential, that includes the development of new technology, the refinement of existing technology, or the development of new applications for existing technology."*

This playbook is a work in progress. **We will continue to THINK BIG, start small, and Scale Fast!** We aim to share our progress and updates over time as the Air (and Space) Force continues to pioneer in innovation.

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The Framework

The Air Force isn't just the most innovative branch, it's quite possibly the most innovative business in the world...the Air Force is a culture of ideas.

– Simon Sinek, Author of *Start with Why*

Innovation is now the competitive domain in which the battle for our national security will be fought. Competition is dwindling as the defense industry consolidates. Times have changed, as ~80 percent of our nation's research and development occurs in the commercial sector, and the acquisition systems we inherited become obsolete. AFWERX, chartered in 2017, embodies the modernization of procurement in the U.S. Air Force. AFWERX is a catalyst to **innovate, integrate, and implement creative and disruptive technology options from mutually beneficial relationships with industry, academia, and non-traditional acquisition**. Connecting diverse, innovative members from traditional and non-traditional communities is at the heart of the mission, and AFWERX is the interface.
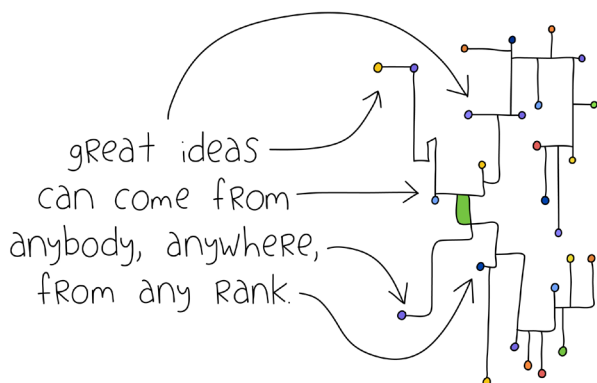
The Innovation Ecosystem Strategy

An open innovation model relies on creating new and diverse connections to source the best ideas and solutions. Porous organizational boundaries and dense networks enable the process by allowing information, ideas, and resources to flow more freely between players. A strong network can rapidly transmit the communication of a need and generate competitive solutions from a wide field. AFWERX is cultivating and expanding an ecosystem that connects thousands of Airmen, contracting officers, startup companies, research institutions, private sector investors,

great ideas can come from anybody, anywhere, from any rank.

@gapingvoid

fellow government agencies, and more to its mission. The opportunities AFWERX and this ecosystem create for innovators to connect, collaborate, and find support and resources aligns strategic and organic innovation activity in the mission for real-world solutions and technology transition.

Foundational Beliefs

1. **The Right People & Processes:** Innovation can come from anywhere. AFWERX serves to develop the culture and engage people at all ranks in the innovation process and to clear the pathway for those innovators to find viable solutions.

2. **A Culture of Experimentation:** The only constant is change. Leveraging the Air Force culture of experimentation is a foundation for the innovation and technology procurement process. AFWERX continuously explores and tests new approaches to transform the partner/supplier relationship while solidifying commitment to the new paradigm across ranks.

3. **Investment Mindset:** The government can no longer rely on being the R&D titan in the room as more capital from the private market flows into the development of new ideas. Aligning innovation programs with the commercial markets and helping to catalyze additional investment is necessary to develop competitive players in the broader innovation economy — firms that win in the commercial and defense arenas.

4. **Outside-Facing:** The Air Force can no longer hide away from the rest of the innovation and tech world. External relationships where the best ideas, technology, product, or service are being created can change the way the organization does business in days and weeks. Shifting the scope to see opportunities across the value chain is the pathway to fostering a 21st-century industry base.

5. **Positive User Experience:** Cutting red tape, empowering Air Force personnel, and redefining incentive and investment structures can signal to the world we are doing business in a new way. AFWERX has been challenging the status quo since day one. Attention to the details of creating a positive experience for every stakeholder drives success and allows us to engage the innovation economy in ways never seen before.

Critical Factors in the Innovation Ecosystem – The Five Node Model

Innovation cannot happen without collaboration among stakeholders. Innovators need an ecosystem — a team and resources around them — to be successful. AFWERX builds each innovation project on a Five Node Model. This provides a personnel framework for how to get projects off the ground and guidance on where and when to find support and resources. The critical innovation nodes are:

1. **The Intrapreneur:** The Intrapreneur is the most critical node, as this role serves as the Project Champion. The intrapreneur might be an end-user of innovative ideas or a non-end user such as an acquisition program manager.

2. **Public Affairs, Contracting, and Legal:** A successful project requires Pathfinders who will provide project shaping insights. The core skills in these areas will increase effectiveness. Engage them early and often.

3. **Resourced Advocates:** To prototype and scale, funding and resources must be acquired from these stakeholders. The availability of financial resources will influence the selection criteria to determine which innovation projects to pursue.

> "Innovation IS the new battlefield."
>
> – Dr. Will Roper, Air Force Assistant Secretary for Acquisition, Technology, and Logistics

4. **Engaged Leadership:** The Organizational Will of a leader nurtures a project's momentum. Support must be explicit and direct to empower project participants to devote any of their time toward the effort.

5. **Solution Providers:** Solutions often reside within the technology of an outside Innovator, whether they come from industry, academia, government, investors, or entrepreneurial suppliers.

What follows are 14 close-to-the-ground tactics AFWERX has used to develop a cutting-edge Ecosystem for Innovation.

5 FACTORS THAT INCREASE PROJECT SUCCESS

PROJECT CHAMPION (often an end-user) understands the problem

PATH FINDERS Core skills needed to create pathways

ORGANIZATIONAL WILL ensures solutions will be deployed and transferred

INTRAPRENEUR

P.A., CONTRACTING AND LEGAL

RESOURCED ADVOCATES

ENGAGED LEADERSHIP

SOLUTION PROVIDERS

Stakeholders provide **FUNDING** for prototyping and scaling

INNOVATORS from academia, industry and the investment community help create new solutions

THE PLAYS

#1 Open the Door to Innovation

Changing the landscape of how non-traditional industry partners and small businesses could join forces with Airmen to strengthen the Defense Industrial Base, seemed like it would be a monstrous challenge. However, what we found was that when you stop to see things from the other person's perspective and begin to eliminate, or at least minimize, roadblocks for them, the path to working together seems to smooth itself out.

– Empowering Next Generation Innovators and Innovations Handbook, AFWERX

SOLUTION PROVIDERS | **INNOVATORS** from academia, industry, and the investment community help create new solutions.

When a startup is ready to bring its innovative products to either private enterprises or government — because they don't have the resources or time to pursue both — why would they choose to work with you? The innovation economy has changed and continues to change. Adapting your processes to match this evolution to truly open your doors is necessary to access the technology being built in our country.

Startups or small businesses? For the purposes of this playbook, we're focused on high-growth, innovative startups that can compete in the commercial market.

An easy-open door enables the Air Force to solve problems using existing and emerging commercial solutions.

Startups do not usually pursue government contracts. Most startup investors strongly discourage their portfolio from pursuing government contracts, and startups hold

a common belief that working with the government is a massive time sink. It's perceived that the private sector moves faster, and is easier to work with.

That last point is worth repeating: **the private sector moves faster and is easier to work with**. The way the government works is generally not compatible with start-up timelines.

In the startup world, there is a term called "runway" which is how long the company has before it runs out of money; in most cases, it's less than 12 months. Even the biggest and most successful startups have high "burn rates" (how fast they spend money) and short runways. This is something that government agencies simply never have to worry about.

To work with startups, it's essential to understand this constraint. If it takes 12 months to work with your agency, few startups will bring their cutting-edge technology to you because they simply can't wait that long.

The chart below shows the timelines of SBIR/STTR programs across several government agencies. Notice that AFWERX can conduct three complete cycles, from application to payment, in less time than most other

"As an early stage startup company, we had no plans to pursue the federal market due to expectations of a complex and arduous contracting process. The process to identify and connect with DoD customers seemed complicated and lengthy. Then we heard AFWERX could get small businesses under contract in under 30 days. We didn't believe it but submitted a proposal anyway. We were under contract within 28 days and that was the beginning of our SBIR journey. Now we have an additional Phase 1, multiple Phase 2s, and a Phase 3 contract."

– Scott Schneider, CEO, HTX Labs, LLC,
  SBIR Company

government programs complete a single cycle. This is what "operating at the speed of relevance" means for startups.

Government agencies have to leverage their strengths. They are specially positioned to repeatedly bring significant amounts of capital, sector expertise, access to talent and resources to spur the growth and development of a technology or innovation arena. Startups need access to the strengths that government agencies can provide, but they won't explore this option if the on-ramp is too steep.

Statista estimates that over 2 million new businesses started in the United States since 2018. But, according to PwC's MoneyTree report, only 15,537 companies received venture capital funding in the United States over that time. Government funding is a huge advantage, so your organization should be willing to walk the walk. Startups will pursue the routes they perceive as easiest, so look for ways to make access to your contracts the obvious option.

FUNDING TIMELINE BY R&D TEAM (ordered by amount of time from angel pitch to seed round payment)
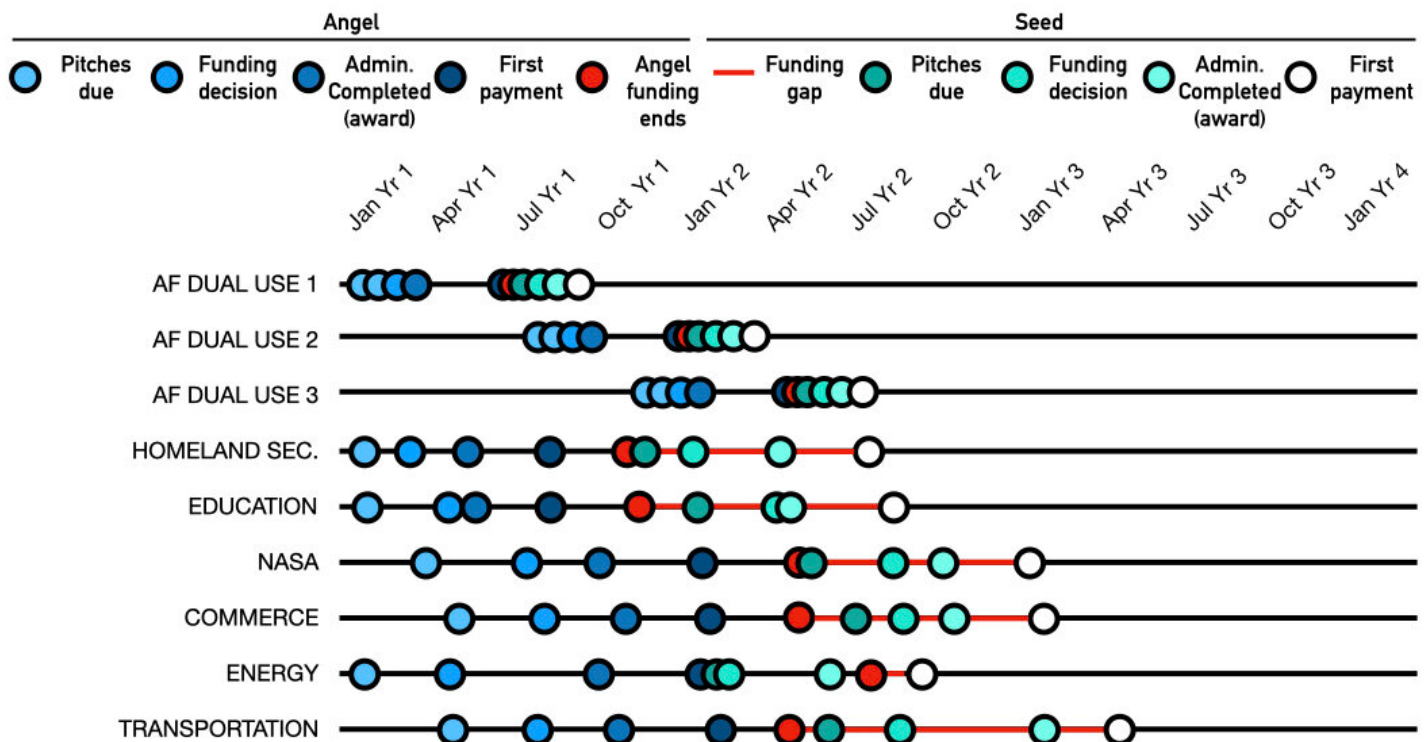
Source: "The Three Fastest SBIR Programs," Geoff Orazem, Agency Capital, www.agency-capital.com

To position the Air Force to work with more high-potential startups, AFWERX began experimenting with the elements core to the acquisition process, seeking to remove the barriers that make the process burdensome.

These barriers include:

- The entry point, or access point, for external participants to get involved

- The calls for proposals and thematic framing that indicates focus areas and problems to be addressed

- The application requirements and pitch process

- Evaluation and funding timelines

- The contracting process

- The support provided and commitments to companies on contract

Instead, AFWERX seeks to:

- Partner with companies who can succeed in the commercial industry base

- Lower the barriers for startups to doing business with the Air Force and other federal agencies — especially regarding access to people, problems, and data; restrictive requirements, and complicated contracting processes

- Catalyze additional investment that will help develop startup innovation for the U.S. economy

- Ensure that partnerships are a stepping stone to transition and recurring revenue

- Create a positive user experience for all involved

2018-2019 AFWERX AFVENTURES OVERVIEW

HIGHER TRANSITION RATE

Over $5 of non-SBIR funding going to companies for every $1 SBIR, as compared to $0.75:$1 in the legacy program

INCREASED PRIVATE INVESTMENT

$3.17 of Private Funds for every $1 of Taxpayer funds contributing to dual-use R&D

ESTABLISHED MMXX

AFVENTURES

FASTER THAN EVER

Time to "commercial" funding (non-SBIR dollars) within an average of 5 months as compared to 74 months in the legacy program

MORE PARTNERS

Over 1,300 awards in less than 2 years, of which over 70% have never worked with the Air Force before!

Ready to Get Started

- ☐ Gather feedback from the private sector about your existing process.

- ☐ Based on feedback, find what would make it easier for startups to get involved.

- ☐ Assess your funding timeline — from proposal to application to pitch to cutting the first check.

- ☐ Model out a more streamlined process for startups to engage with your organization.

- ☐ Compare your submission requirements to other startup pitch competitions and standard investor pitch decks.

- ☐ Read, watch, or listen to Steve Blank's Mission Model Canvas introduction.

- ☐ Begin your work on a Mission Model Canvas for your organization.

Resources

The Mission Model Canvas by Steve Blank
steveblank.com/2016/02/23/the-mission-model-canvas-an-adapted-business-model-canvas-for-mission-driven-organizations/

"High Growth Young Firms: Contribution to Job, Output and Productivity Growth," CARRA Working Paper Series
census.gov/content/dam/Census/library/working-papers/2017/adrm/carra-wp-2017-03.pdf

"Quarterly number of business starts in the United States from Q1 2010 to Q4 2019." *Statista*
statista.com/statistics/771207/quarterly-business-starts-us/

"MoneyTree Report" by PwC
pwc.com/us/en/industries/technology/moneytree/explorer.html#/

#2 Funding Startup Innovation

The amount of private capital towards R&D is now five times that of defense funding towards R&D. If we are to stay technologically relevant moving into the future, we must learn how to leverage those funds and integrate the results.

– Empowering Next Generation Innovators and Innovations Handbook, AFWERX

RESOURCED ADVOCATES | Stakeholders provide **FUNDING** for prototyping and scaling.

Your program to finance the acquisition of innovation will signal to the commercial world what kind of partner you want to be. Traditional acquisition and procurement programs with long time horizons and onerous processes repel new entrants as private capital flows into the development of new ideas and technology.

These realities demand we rethink acquisition and procurement—that is, the way we invest. Yes, invest. **Organizational budgets are the new investment tool to attract and develop innovative solutions** without requiring a transfer in equity that dilutes ownership in startup firms. This shift in perspective about acquisitions is how an innovation program becomes a linchpin in gaining a competitive advantage.

Many of the insights about funding innovation are taken from the Air Force SBIR program. The lessons shared here are meant to inform any program to finance innovation, regardless of the source.

AFVentures launched in 2018 to amplify innovation investment capabilities and ensure high-potential solutions would be funded. A collaborative effort of the Office of the Assistant Secretary of the Air Force for Acquisition, Technology and Logistics, Air Force Research Lab, and the SBIR/STTR Center of Excellence, AFVentures brings the private sector into partnership with the Air Force and connects program offices, test centers, sustainment centers, and research teams with pivotal innovation roles and resources. Under AFVentures, innovation funding has emerged as a centralized investment portfolio of the most compelling solutions for the Air Force.

The Investment Process

1 AFVentures releases an Open Topic call for proposals every 3 months.

2 The online submission portal is open for approximately 30 days.

3 Open Topic is posted approximately 30 days before the submission portal opens to give companies time to prepare and learn more about the submission and focus area requirements.

4 Response to proposals submitted typically occurs within 60 days. Contracts are awarded within 60-90 days.

5 Companies that can already demonstrate the viability of their technology and the existence of an Air Force customer can bypass the first phase and submit for a "Direct to Phase II" contract.

How the Air Force Became an Investor in Startups

A POOL OF CAPITAL

Air Force acquisition and procurement investments are tied to program budgets. Leveraging the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs allows the Air Force to fund research contracts with qualified majority U.S.-owned companies outside of program budgets and at a lower perceived risk. Successful first-phase contracts result in additional funding and eventually may transition over to the standard procurement process with funding from the respective program. In 2019, the total Air Force SBIR/STTR budget amounted to roughly $795 million.

NON-TRADITIONAL PARTNERS/SUPPLIERS

The SBIR program serves startups and small businesses that have historically been left out of defense contracting. **Opening the procurement pipeline to a new category of partners/suppliers with commercially-viable technology draws partners that may not otherwise have opted into a government contract.** This stimulates high-tech innovation and entrepreneurship among startup firms and can be applied in strategic industry verticals.

UNORTHODOX CONTRACTING

The AFWERX strategy is that of **"take many small bets, scale the winners."** In the small bet category, approximately 1,000 first-phase contracts worth up to $50K and

"We do not invest in companies for equity so we are not directly tied to the success of the company. We are tied to the success of the company's technology and subsequent product or service that they are developing through the SBIR funds we invest. In this way, we have a complementary mechanism through which to syndicate with other investment partners. In our eyes, the other investors serve to derisk the company by sitting on boards and overseeing growth strategy, while we serve a unique position by validating the technology that the company is building as its core competency on a viable path to the Air Force market."

– Dr. Jason Rathje, AFVentures Director, AFWERX

300 second-phase contracts worth up to $1M are awarded to eligible companies each year. In big bets, 10-15 strategic contracts worth $10M+ are awarded. This staged approach allows for increased investment as an innovation proves to be both viable and useful.

CONTRACTING CAN HAPPEN ANYWHERE

Contracts are awarded in a variety of settings to appeal to non-traditional partners/suppliers.

Pitch Days – Showcase events for innovators to present their solution to Air Force customers and advance to an early contracting phase. Contracts are awarded on the spot.

Spark Colliders – Events held at local Air Force bases (or online during Covid restricted periods) connect Airmen with technological needs and access to SBIR funding to startups with potential solutions.

Special Topics/Challenges – Solicitations for proposals to strategic focus areas. Examples include COVID-19 response and electric flying vehicles.

Open Dual-Use Topics – Solicitation for any technological solution that may meet either an identified or an undiscovered Air Force need.

Joint Topics – Solicitations for technological solutions in collaboration with other Department of Defense branches.
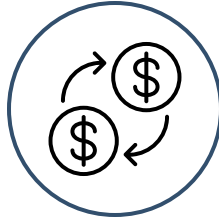
On-the-Spot Credit Cards – An immediate cash infusion in competitively selected companies by making a credit card payment at the time of an event.

FEASIBILITY / SMALL BETS
Up to $50,000 per award
1000-1500 awards per year
Triannual Solicitation Opening

PRODUCT-MARKET / MEDIUM BETS
Up to $1.5M per award
Matched funding encouraged
300-500 awards per year

BIG BETS
Up to $15M (SBIR) Awards
20+ Awards per year
Matching funding required
Annual Solicitation

INTELLECTUAL PROPERTY RIGHTS

Intellectual property (IP) is often an early stage venture's most valuable asset. Patents, copyrights, trademarks, and trade secrets are taken into account in determining the value of a startup investment. **It is important to understand how your policies, practices, and agreements may affect a startup's IP rights** and perceived risk.

To curtail concerns about IP, the SBIR/STTR policy directive includes provisions for its participants to retain title to IP. The provision, known as the *University and Small Business Patent Procedures (Bayh-Dole) Act*, states that "a small business may retain the entire right, title, and interest throughout the world to each subject invention" developed through government-funded research. Startups are encouraged to read these provisions and to know their rights and restrictions in contracting with the government.

How AFVentures is Placing Innovation Bets

MANY SMALL BETS (PHASE I)

- "A simple, open door for innovation"
- Up to $50,000 per award
- 1000-1500 awards per year
- Three solicitations per year

Fund short-term research contracts to develop the concept, test feasibility, and identify potential customers. Assist in the customer discovery process by connecting companies to government stakeholders.

SOME MEDIUM BETS (PHASE II)

- Up to $1.5M per award
- Matched funding encouraged
- 300-500 awards per year
- Live and virtual customer matchmaking

Fund medium-term research contracts to develop a prototype or demonstration and test it with potential customers. Companies are matched to potential Air Force customers through live and virtual events.

A FEW BIG BETS (STRATEGIC FINANCING OR "STRATFI")

- Up to $15M (SBIR) Awards
- Approximately 20 Awards per year
- 1:1:2 Program-SBIR-Private Matching
- Annual Solicitation

This hybrid program combines SBIR funds, private capital, and organizational budget to mitigate risk and explore technological potential with partners/suppliers. Contracts are designed to scale and integrate a solution. This program requires the end Air Force user to put "skin in the game" by funding a portion of the contract from the unit's budget but serves to encourage the adoption of high-potential solutions that may introduce a higher level of risk than the end-user can tolerate. After a successful trial, companies may advance into contracting with any U.S. Government agency.

Note: Companies do not have to complete all phases or complete a research phase to advance to a standard contract. If an Air Force customer wants to acquire the technology immediately, the company is allowed to transition out of the research-based contract.

CATALYZE ADDITIONAL INVESTMENT

An Air Force contract can help a startup attract additional investment capital for use in developing its technology. Startups are encouraged to leverage AFVentures contracts to attract additional capital from private markets and other government entities. Today, $1 invested by the Air Force triggers more than $3 of private investment, and $2 of government funding.

About SBA SBIR/STTR

Company Eligibility: A for-profit, majority U.S.-owned concern with no more than 500 employees.

Purpose: To strengthen the role of innovative small businesses in federally funded research or research and development, and to

- Stimulate technological innovation;
- Employ small businesses to meet federal R/R&D needs;

- Foster and encourage participation among socially and economically disadvantaged and women-owned small business concerns in technological innovation; and
- Increase private sector commercialization of innovation derived from Federal R/R&D activity, thereby increasing competition, productivity, and economic growth.

AFWERX PROGRESS REPORT, Q2 2018 - Q1 2020

$629M
TOTAL FUNDING

$105M
GOVERNMENT-MATCHED FUNDING
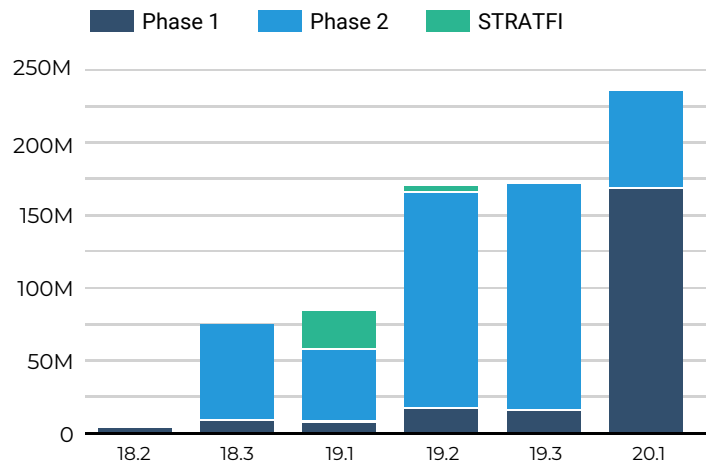
$149M
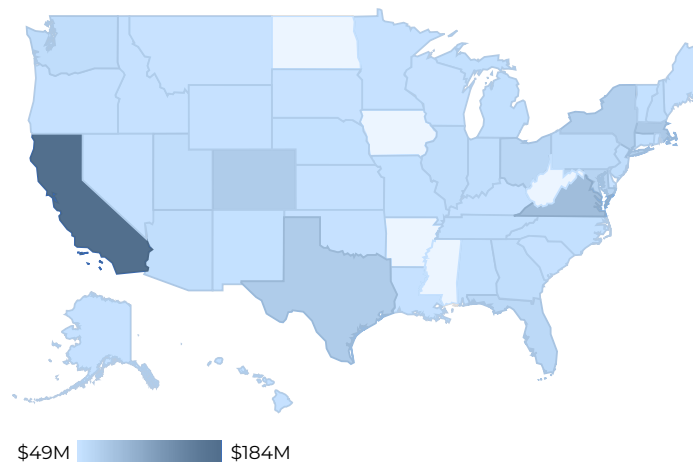PRIVATE MATCHED FUNDING

$1.96B
POST-AWARD PRIVATE INVESTMENT

$306.7M
POST-AWARD GOVERNMENT FUNDING

SBIR/STTR

Phase 1   Phase 2   STRATFI

Awards by State

$49M $184M

Ready to Get Started

☐ Assess where startups encounter barriers in your procurement process. Brainstorm ways to eliminate those barriers.

☐ Scope out how your organization could stage investments in innovation.

Resources

The 4 Disciplines of Execution: Achieving Your Wildly Important Goals by McChesney, Covery & Huling

AF SBIR/STTR Center of Excellence Website
afsbirsttr.af.mil

AFWERX "Ask Me Anything" Webinars
afwerx.af.mil/office-hours.html

AFWERX Website
afwerx.af.mil

Peak Performance by Brian Elms

SBIR Policy Directive
sbir.gov/sites/default/files/SBIR-STTR_Policy_Directive_including_Preamble_2019.pdf

Spark Collider Website
afwerx.af.mil/spark-collider.html

#3 Adopt the Investor Mindset

Someone's sitting in the shade today because someone planted a tree long time ago.

– Warren Buffett, American Investor

RESOURCED ADVOCATES | Stakeholders provide **FUNDING** for prototyping and scaling.

Investment strategy is the backbone of an avant-garde acquisitions program. There are many differing views on what it takes to invest successfully. AFVentures is at the vanguard of adopting investment principles that align with the venture landscape; this set of practices was taken from the fields of venture capital and private equity that drive startup financing.

Acquisition and Procurement the AFVentures Way

A Managed Fund Approach: A unified team making decisions about how to invest a pool of money. In the past, procurement was broken out across Air Force agencies and programs. Now acquisition and procurement programs are treated as a strategic capability. AFVentures oversees innovation programs to make holistic investment decisions for the benefit of the department. The entire Air Force has access to the program with no pre-set limit to the amount of SBIR budget an organization can access. Rather than weighing decisions based on individual programs, **each proposal is now evaluated as a part of an investment portfolio**.

Curated Deal Flow: Planning to receive business pitches and proposals at a certain rate and level of quality. Expecting proposals to match detailed tech specifications is a thing of the past. AFVentures aggressively encourages proposals for any topic and solution. Open Topics (explained in detail in the **"Create an Easy Target"** section of this playbook) guides startups to pitch ideas regardless

of requirements. Networking serves to build a pipeline of quality prospects. More on deal flow in the next play.

Buy Down Risk: Steps to increase the likelihood of a successful outcome or reduce exposure to loss. By providing funding to explore the feasibility of fledgling technology, AFVentures accelerates evaluation of a technology and reduces the risk for an end-user interested in testing an innovative option that's outside their comfort zone. This is useful when a customer understands the benefit of a new technology but requires a safety net to consider implementation.

Co-Investors: Enable third-party investment that would otherwise not be possible. AFVentures is redefining its public role in innovation with the goal to stimulate additional investment in the wider innovation economy. Guaranteed revenue, non-dilutive capital and access to research labs and other resources available to AFWERX contractors are powerful signals to other private and government investors. In this way, an AFVentures contract serves as a force multiplier for startups seeking investment to develop their technology and potential.

Due Diligence: Standard evaluation of proposals taking commercial viability into account. In the past, innovation decisions were folded into the standard procurement process at the office or program level. Entrants that didn't fit the time-tested partner/supplier mold were often overlooked along with their innovative ideas. Evaluation

> "Because of the Air Force SBIR contract, we've been able to attract additional investment into our company due to the interest and confidence of the government in our solution."
>
> – David King Lassman, CEO, GIGXR, SBIR Company

methods are being revamped based on venture capital, private equity, and corporate venture models that value innovative solutions and account for the startup context. Now evaluation is designed for non-traditional entrants with commercial viability in mind.

Return on Investment (ROI): Measurement of the efficiency of an investment. The AFVentures program is too new to estimate its potential contribution to the Air Force just yet. But tracking data and outcomes against time, money, and resources has been a part of the process from the start. Early accounts indicate the program is succeeding in stimulating innovation in the commercial

sector. AFVentures tracks metrics that are most telling for its mission, and quantifies ROI as follows:

- ▶ The **number of companies** applying to the programs has increased 3x in 3 years (record # of submissions).
- ▶ **Time to commercialization**, or how long it takes for a company receiving an SBIR contract to realize $1 of non-SBIR revenue, has improved over 90%, from 74 months to 5 months.
- ▶ 70% of companies awarded SBIR contracts are **new entrants** to the federal government's partners/suppliers network.
- ▶ The program **generated additional investment**; over $11 in private capital for every $1 government dollar invested in SBIR companies in the first two years.

Speed of Relevance: Acting on a decision while it can still impact performance. As we've said before, startups need investment that moves fast. AFVentures is reinvigorating innovation programs to increase startup participation and transition rates. Reducing friction at each step in the process allows investments to move faster. Evaluating proposals (due diligence), cutting contract bureaucracy and decision-making overhead (term sheets), and building interest in the program (deal flow) are all under continuous improvement plans.

FUNDING SECURED BY AIR FORCE SBIR COMPANIES BY SOURCE, MAR 2019-JUL 2020

Private funding data pulled from Crunchbase and Pitchbook
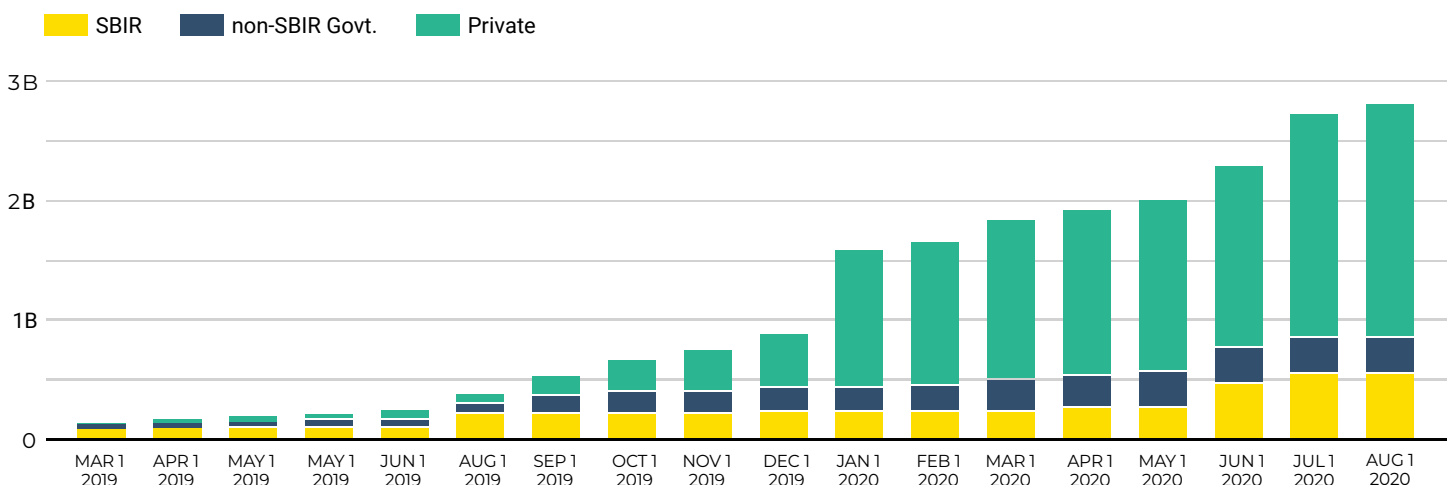
The Benefits of the Investor Mindset

For Internal Innovators: An efficient well-crafted procurement process delivers relevant solutions faster. Centralizing the duties of sourcing, due diligence, and contracting frees hundreds of professionals from an administrative burden and creates clear pathways for meaningful solutions to day-to-day problems.

For Startups: A centralized acquisition program offers the consistency and speed they are looking for in a customer. Timely contracts, simple funding models, and fluid feedback loops reflect the speed of the private capital market. A partner relationship centered on investments in developing the technology may help startups to meet their biggest goals and challenges.

For the Organization: Practicing investment principles improves overall volume and quality of technological solutions and interested partners. **An investment-driven acquisition model opens the door to new industry partners, startups, and scale-ups for non-traditional dual-use technology that you may not otherwise discover.**

For the National Economy: Investing in technology that is relevant to both defense needs and commercial markets supports the growth of a 21st-century innovation economy where startup firms thrive. Government funding and resources can catalyze additional investment to accelerate innovation and competitive solutions across sectors and verticals.

> "The resounding feedback we've gotten from the small companies is that it's so much better for them to be able to tell investors and stakeholders that they're going to have consistent cash flow over time."
>
> – Dr. Will Roper, Assistant Secretary of the Air Force for Acquisition, Technology & Logistics

Ready to Get Started

- ☐ Identify processes that could be improved. Consider your due diligence, term negotiations, and deal flow processes as fair game.

- ☐ Identify resources in addition to funding that your organization could make available to accelerate development of solutions, e.g. lab space, technical advisors.

- ☐ Define ROI for your innovation program.

Resources

DealBook, NY Times
nytimes.com/section/business/dealbook

Venture Deals: Be Smarter Than Your Lawyer and Venture Capitalist
by Brad Feld and Jason Mendelson

"What Investors Look For," *SVB Blog*
svb.com/blogs/jp-giannini/what-investors-look-for-povs-from-the-other-side-of-the-table

#4 Create the Ideal Deal Flow

Always wake up with a smile knowing that today you are going to have fun accomplishing what others are too afraid to do.

– Marc Cuban, American Entrepreneur and Investor

SOLUTION PROVIDERS | **INNOVATORS** from academia, industry, and the investment community help create new solutions.

Few things weigh more on the success of an innovation program than the quality of startups within your network. But how to source quality startups and solutions? Curating incoming opportunities that match your investment priority is a page straight out of the venture capital handbook. In investor speak, **"deal flow" is the quality and quantity of your investment opportunities**. In this play, we outline some strategies for creating powerful deal flow.

First, a Deal Flow Strategy

In learning from leading investors and venture capital firms, AFWERX picked up on a few best practices for managing opportunities. But before a deal flow strategy could be honed, the team needed to define the types of deals ("contracts" in the AFWERX model) that would best match the investment mission. Here are the key questions and how AFWERX and AFVentures answered them. Of course, your answers will be different based on your investment objectives.

Q: WHAT KIND OF DEALS SHOULD WE BE DOING?

A: Research and development deals that would capitalize on SBIR/STTR and other federal research funding programs. Emphasis on nascent firms that meet SBIR/STTR criteria and align with the long-term mission to create a competitive industry base that thrives in the commercial market.

Q: WHAT STAGE? WHAT VALUE? WITH MATCHING INVESTMENT?

A: Early stage. Firms with the potential to survive in commercial markets with or without defense contracts. Deal size adequate to incentivize new entrants to do feasibility (see "Financing Innovation" by S. Howell for what funding amounts work best). Additional funding should be available to companies that successfully complete a contract. Matched investment enhances evaluation of the firm but is not required in the first phase.

Q: IN WHAT GEOGRAPHIES OR INDUSTRIES?

A: Prioritize development in congressional districts that have historically been underrepresented in SBIR/STTR and defense contracting. Elevate strategic technology arenas, such as energy, space transport, and flying cars, through "AFWERX Challenge" and other special programs and events.

Q: HOW WILL DUE DILIGENCE BALANCE EVALUATION OF FIRMS AND BUSINESS PLANS AGAINST TECHNOLOGY?

A: Prioritize the potential for a solution to meet an Air Force need first and commercial viability second. Evaluation should take the startup/small business context into consideration.

Now, How to Build Deal Flow

With the investment target in scope, you're ready to lay the groundwork for a pipeline of high-potential deals. Here are the take-aways from our experience:

1 Start by building community.

Your network will become an invaluable source of potential deals. You'll want to develop an innovative brand that startups can identify with. Build trust and gain participation from the community by adding value through partnership, programs and connections. AFWERX established a partnership network, as described in the "Engage the Startup Ecosystem" section of this playbook, to tap into startup ecosystems around the world.

How AFWERX builds community:

- ► Host in-person events, webinars, and other innovation-related events.
- ► Speak and network at select conferences.
- ► Engage partners to spread the word or make referrals.

- ► Maintain a mailing list that can be segmented by contact type for calls to action or targeted communication.
- ► Offer innovation challenges and accelerator programs for startups.
- ► Nurture high-potential leads through email campaigns and engagement opportunities.

2 Establish a process that scales.

In creating a pipeline to drive opportunities over the long-term, your team must continuously seek efficient ways to increase deal flow.

AFWERX manages its Open Topics, event series, and other team activities to improve the timeline, quality, and number of deals. Innovation events, communications and programs now attract large numbers of new entrants. Clear processes ensure the team is able to manage this growing community

AFWERX processes to support the community at scale include:

- ► Centralized intake. The Open Topic, pitch days, and innovation challenge series provide a clear entry point.
- ► Customer service. A dedicated support team and contact system with defined protocols handles a large volume of inquiries from the community.

- ► Communication systems. Information is sent to subscribers regularly. Mailing lists are limited to (1) an ecosystem-wide list for general updates, (2) email nurture campaigns for companies with potential deals, and (3) a partner distribution list to activate ecosystem promotion.
- ► One-to-Many support. Public online information sessions are offered several times a month. Sessions are recorded and published on YouTube to make them readily available on demand.

3 Contribute valuable content.

Publishing information and stories helps to build a larger community outside of events and investment pitches.

AFWERX shares program information and guidance on channels including:

- ► Website with pages dedicated to the "private sector"
- ► Monthly newsletter
- ► Blog

- ► Social media
- ► Youtube videos
- ► Dedicated landing pages with email drip campaigns
- ► Speaking engagements reaching target audiences

Ready to Get Started

☐ Answer the "Ideal Deal Flow" questions with your team.

☐ Chart out the 3-5 short-range tactics to grow your community.

☐ List possible content your organization could publish to provide value to your community.

Resources

AFWERX Blog
medium.com/@afwerx

AFWERX Challenge Website
afwerxchallenge.com

"Developing a Content Marketing Strategy" from the Content Marketing Institute
contentmarketinginstitute.com/developing-a-strategy

"Financing Innovation" by Sabrina T. Howell
energy.gov/sites/prod/files/2019/03/f60/sbir-eere-fe-analysis-howell-report-2019.pdf

#5 Incentivize Behavior Change

Our only security is our ability to change. – John Lilly, American Scientist
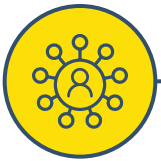
ENGAGED LEADERSHIP | **ORGANIZATIONAL WILL** ensures solutions will be deployed and transferred.

Acquiring innovation is an art. Effective change management and experimentation demand the organization keeps people "in the loop" so they can understand their role within the larger mission and act in ways that lead to greater success for all.

Managing change across a spectrum of enablement, engagement, and reinforcement helps to create and sustain momentum for change.

▸ **Enablement:** Do people have the awareness that things need to change, the desire to change, the knowledge needed?

▸ **Engagement:** Do people have the training and resources to act?

▸ **Reinforcement:** Do people have the support to sustain the changed behavior?

AFWERX is a lean organization. The secret to making a big impact with limited staff has been focusing energy and resources in areas where it was possible to demonstrate how internal behavior change resulted in wins, or greater success for all.

For example, the traditional Air Force procurement process was fragmented and slow. Disconnected teams in various offices made stand-alone decisions according to their interests. Teams weren't connected to share information and ideas. The disconnection, especially between contracting and finance teams resulted in loss of time, money, opportunities. Improving the process meant finding ways to help all involved become better at their jobs. Responsibilities were redistributed to improve overall performance. Internal calls and special cross-functional work events serve to reinforce the benefits and adoption of new strategic processes.

"Centralizing the evaluation process has set the standard. Previously, the process had long lead times. This made the Air Force an undesirable customer for many companies. Now, companies can get on trial quickly and the Air Force is a "worthy partner."

– 1st Lt. Zoe Walters, SBIR Phase I Project Manager

AFWERX and Sustaining Change

Enablement Loops – AFWERX consolidated procurement functions and processes by introducing a process to complete evaluations in bulk. By bringing finance and contract officers together into a centralized process, dedicated teams were able to share information and find mutually beneficial outcomes in the streamlined decision-making process. To facilitate change management, AFWERX seeks to make it easy for different stakeholders to engage in and see value from the process.

Unified Engagement – Gathering key stakeholders at the time of evaluation to make decisions in unison simplified the contracting process considerably, and provided the opportunity to reinforce the greater imperative of innovation throughout the process. Reconfiguring the system for evaluating, contracting, and financing solutions helped to minimize the back-and-forth between teams

@gapingvoid
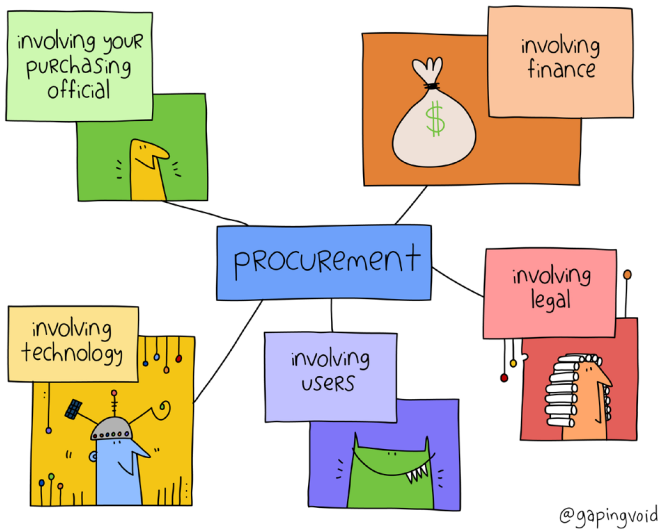
to save time and improve communication. This practice, referred to as a "sprint," is now standard procedure.

Positive Reinforcement – The reinvented contracting process exposed Air Force personnel to the possibility of conducting business in new ways. The first-hand experience of a reduced workload combined with desirable outcomes created buy-in for new processes and underscored why AFWERX was committed to approaching things differently. The positive reinforcement loop among stakeholders allows AFWERX to continue advancing ideas for how the Air Force can acquire innovation efficiently and effectively.

Early Adopters – AFWERX established itself early on as an ally for personnel that are frustrated with the status quo or are interested in improving systems. These early adopters stepped up and are invited to opt-in to trying out new ideas and processes. They often serve to influence others and advocate for improvement within their departments.

Ready to Get Started

☐ Get to know the people behind the process and what they need.

☐ Look for 2-3 possible improvements that would result in "quick wins" to engage people and reinforce changed behavior.

☐ Identify opportunities to show how a process improvement and redefined roles are important to the bigger picture.

☐ Find your champions and build a small community of early adopters that readily shares knowledge, information, and ideas.

Resources

"Leading Change: Why Transformation Efforts Fail" by John Kotter in *Harvard Business Review*
hbr.org/2007/01/leading-change-why-transformation-efforts-fail

"National Defense Strategy," Department of Defense
dod.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf

#6 Build the Right Team

If you want to build a ship, don't drum up the men to gather wood, divide the work, and give orders. Instead, teach them to yearn for the vast and endless sea.

– Antoine de Saint-Exupéry, French Writer and Aviator

ALL NODES. ALL PEOPLE.
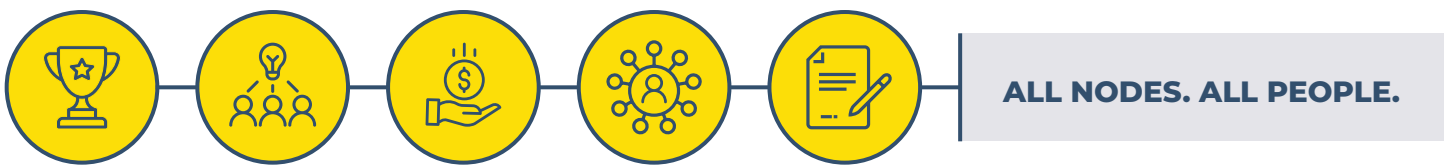
What happens when startups and the startup community interact with your team? Do they walk away feeling like they've met with fellow innovators, or with bureaucrats? Build a team that works both effectively and efficiently. You need to get the job done, and you need to attract — not repel — other innovators.

There is a lot of work to be done, and it is likely the innovation team you're on will be small and under-resourced. Use that to your advantage: work to be more scrappy and act like a startup. **Removing the command and control element allows teams to execute, iterate, and test at the speed of relevancy.** They are aligned in the mission and empowered to make decisions. This "coalition of the willing" (based on Stanley McChrystal's model in *Team of Teams*) is necessary to drive and sustain innovation.

A "Coalition of the Willing"

There is an undercurrent of people in the government who want to make things better. It's a big reason why people choose to serve.

AFWERX taps into this pool of people who want to make change. The team emerged from a small steering group into a "coalition of the willing" in which people take on projects or tasks of their choosing. Tasks are adopted by those who are passionate and committed to the work, regardless of a job code. No single individual is responsible for any one role. Team members often have multiple roles: their billets, or assigned duties, are not related to AFWERX. It starts with small tasks to demonstrate reliability, allowing people to earn trust and more responsibility.

This is another way that AFWERX experiments: with people and hiring. There's not been a formalized process for hiring. AFWERX is constantly running tests with the "coalition of the willing" until they can be hired or are determined to be uninterested. A mistake to avoid is giving too many tasks to people who are unproven, or overloading proved people with too much to do. Additionally, the people who network better often get more opportunities than the people who keep a distance.

FUN TIP:
Let people create their own titles. This is the innovation space; it creates a fun sense of buy-in for the whole team.

AFWERX looks for disposition and personality. Handling uncertainty, being willing to take on more responsibility than other people, and possessing a desire to face the challenges of the Air Force are all factors that contribute to this desirable disposition. Having the kind of vision mindset of hopefulness will make for great team members. Give people a chance to contribute and get things done, double-down on working with those that persevere, and create a way to get the job done.

Ready to Get Started

- [ ] Identify the gaps in your "coalition of the willing" team according to the "Five Node Model" described in the Framework section.

- [ ] Explore ways to expand your coalition by putting the word out and making it easy for people to contact you.

- [ ] Start small with your own "coalition of the willing" by assigning tasks and see who accomplishes what.

- [ ] Double down with those that are in getting into the trenches with you.

Resources

Loonshots: How to Nurture the Crazy Ideas That Win Wars, Cure Diseases, and Transform Industries by Safi Bahcall

Accelerate: Building Strategic Agility for a Faster-Moving World by John Kotter

AFWERX Handbook: "Empowering Next Generation Innovators and Innovations"
afwerx.af.mil/resources/AFWERX-Book.pdf

#7 Iterate as You Go

Learning and innovation go hand in hand. The arrogance of success is to think that what you did yesterday will be sufficient for tomorrow.

– William Pollard, American Physicist

PATHFINDERS, RESOURCED ADVOCATES, ENGAGED LEADERSHIP – EVERYONE INTERNALLY

Your organization is not set up to innovate. To succeed with an innovation program, you must have its principles built into your processes. In the startup world, we call this, "eating your own dog food." Can you make the process of working with your organization so compelling that innovative commercial companies would want to work with you?

According to *The Innovator's Dilemma*, an organization that aims to create or acquire disruptive technologies must align its resources, processes, and values to that goal.

Hopefully, your parent organization is providing the resources, and we aim to guide you on the processes through this Playbook. The values are up to you, but there is one that cannot be understated: agility, or the ability to test, learn, and iterate.

Eric Reis, author of *The Lean Startup*, identifies three steps in the continuous cycle of innovation: "Build - Measure - Learn." Operational agility, or the ability to iterate and test, prevents you from wasting massive amounts of resources — time and money — on initiatives that don't produce results. **By adopting a culture of iterate and test, you can run more experiments using fewer resources until you find the experiment that shows promise for further investment.** Your success may hinge on this ability to iterate processes until they work for both startups and your organization.

AFWERX Iterates

LOW-RISK TESTING OF OPTIONS

Early on at AFWERX Austin, the managing director knew that he would need data to show the efficacy of both the

RISK taking and innovation REQUIRES a good Support Structure

@gapingvoid
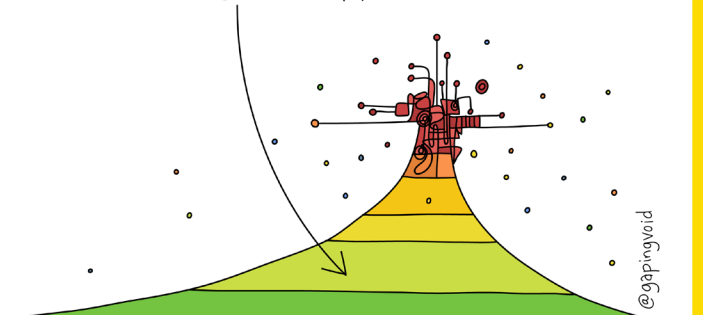
Austin hub and the AFWERX program overall. With no data scientists available, they found money available to train and upskill Airmen through the Air Education and Training Command. They pulled in three individuals and sent each to a different coder bootcamp, creating three data analysts for the nascent program. With this team of upskilled Airmen, AFWERX was able to architect internal systems to collect and analyze the program in each cycle. Not only did this added training provide valuable skills to the Air Force, but the team was also able to vet three different schools for future technical training opportunities.

RAPID PROTOTYPING

The early AFWERX team deliberately conducted Open Topics every cycle, and this habit continues to force a process of rapid iteration. Identifying improvements

> "The earlier you can establish an innovation effort's structure, authorities, and responsibilities, the smoother your multi-stakeholder innovation efforts will become."
>
> – AFWERX Cofounders Brian "Beam" Maue and Mark "Daggers" Ingram

quickly allows for implementation and assessment that can be changed in the next cycle. And, AFWERX has found that this triples their chances to refine and improve their systems, processes, and communications.

In a real-world example of rapid prototyping, the new portal for submitting SBIR applications was crashing, making it impossible to submit applications. The AFWERX team quickly stood up a Google Form—yes, a simple Google Form. This enabled the team to collect the necessary information to process applications and meet the government-mandated deadline. By responding quickly

with a basic solution, the team avoided leaving hundreds of startups locked out with a bad taste for working with the government. By the next cycle, the portal was more robust and the Google Form was scrapped.

LARGE-SCALE SHIFTS

AFWERX experimented with funding dollar amounts. A typical Phase I SBIR contract can range from $100,000 to $150,000. The AFWERX team cut that down significantly from the very beginning. While this met with resistance from companies that were accustomed to the larger awards, the data show that there was no loss of quality of applications due to the change. They experimented with both $50,000 and $75,000 Phase I contracts and again, saw no appreciable difference in quality. The quality was validated statistically using a model for financing innovation developed by NYU economist, Dr. Sabrina Howell. And with a lower initial award, AFWERX was able to award a greater number of companies.

Nurture the iterate-and-test mindset throughout the organization and keep it at the heart of your culture. We encourage you to create pathways that force your organization to learn and iterate on a days and weeks cycle.

Ready to Get Started

☐ Identify potential iterations as hypotheses to test.

☐ What way would you test changes, measure results, and iterate?

☐ Set aggressive timelines that feel uncomfortable (these will improve your learning cycles!)

Resources

The Innovator's Dilemma by Clayton Christensen

"Financing Innovation" by Sabrina T. Howell
energy.gov/sites/prod/files/2019/03/f60/sbir-eere-fe-analysis-howell-report-2019.pdf

"What is Design Thinking?" IDEO
ideou.com/blogs/inspiration/what-is-design-thinking

#8 Solve Real Problems

It is better to solve one problem five ways than to solve five problems one way.

– George Polya, Hungarian Mathematician

| INTRAPRENEUR | **PROJECT CHAMPION** (often an end-user) understands the problem. |

Whatever your organization, true innovation serves the end-user. Investing in understanding needs and problems is what leads to solutions that improve well-being, productivity, performance, and job satisfaction.

That said, an innovation program is not a comment box. It is not a place to drop off ideas for someone else to solve. The system works best when **stakeholders are empowered both to identify problems and make the change** — when they take ownership of the problems or opportunities they want to tackle.

In the past, long development timelines in Air Force procurement risked transitioning solutions that were obsolete by the time they reached the field. The process disconnected the customer — the Airmen that needed the technology — from the crucial development and procurement phases. Lack of communication from end-to-end resulted in failures at the times when the stakes were highest. Now AFWERX finds creative ways to bring end-users into the innovation process to improve the likelihood that innovation efforts will improve outcomes for all Airmen.

Spark Cells

At the local level, Spark Cells are the main resource and channel for Airmen looking to tackle problems and opportunities. This semi-autonomous network of innovation change agents around the world can support the ranks in executing on and funding ideas and innovation. Spark Cells give personnel access to resources and support across the Air Force innovation network. The network enables rapid communication and collaboration across the enterprise.

Spark Cell leaders curate problem statements and determine which problems to put forward as focus areas for the Air Force. AFWERX collects focus areas and makes them available to the public with the intent of matching them to solutions. Focus areas are an important tool to communicate specific needs to the partner/supplier network and private sector.

Colliders

Spark Colliders are events hosted at the base level to expedite the discovery and acquisition process. Airmen focus areas are advertised to the private sector and potential solution providers are invited to participate in customer

> "AFWERX has been an amazing and innovative process compared to most other government programs I have interacted with. The team is responsive, agile, and committed to innovation. We were able to get connected with Air Force personnel who were looking for our particular expertise, otherwise this process can be incredibly arduous."
>
> – Eddie Qureshi, Founder & CEO, Bettermeant Health, SBIR Company

discovery meetings with Airmen to further define the problem, requirements, and opportunities to innovate.

Ideation Platform

To further enhance communication, AFWERX set up a virtual platform for Airmen to elevate ideas. Branded as the "USAF Ideation Platform," Ideascale allows Airmen to crowdsource ideas and share needs that can be turned into focus areas.

This process has opened the door for internal innovators to get connected with a partner/supplier to participate in customer discovery. Airmen and companies can connect to explore potential problem-solution matches. Bringing Airmen into partner/supplier discussions increases the odds that the procurement process will incorporate their feedback and secure solutions that meet their needs.

The innovation program welcomes participation from everyone in the Air Force, from acquisition units, to test units, to air and space operators. The goal is get technology into the hands of those who need it quickly and efficiently regardless of their position in the organization. **A culture that encourages questions, revealing problems, and sharing ideas helps to make innovation a part of the job.** Celebrating wins and failures inspires innovative behavior beyond a "just follow orders" mentality.

> "We talk about transition and "the valley of death" in the military. The buyers and the end-users are often disconnected from the technologist that's developing the solution. A failure to transition a solution from R&D to an acquisition program can usually be traced to mis-communication and lack of planning more often than to a failure in the tech-nology itself. We get through this valley by involving the relevant parties at the earliest stage possible.
>
> – Dr. Jason Rathje, AFVentures Director, AFWERX
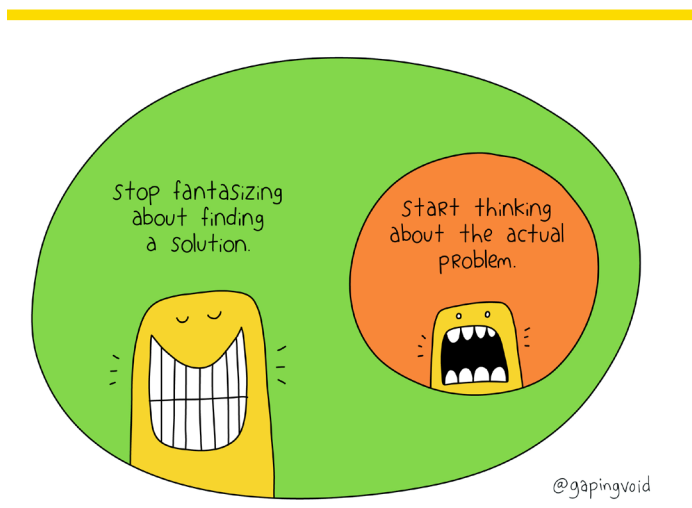
A process to identify problems and match them to potential solutions efficiently is critical to innovation and is an im-portant step in effective change management. Integrating input, ideas, and opinions across the organization can empower everyone to innovate and make a positive impact. An intentional effort to surface problems as opportunities can kickstart the innovation process.

AIR FORCE INNOVATIONS SOLVING REAL PROBLEMS

WIDOW

Web-based Information Dominant Warfare Mission Planning Software

In May 2019, Maj. Brad "Ralphie" Short was conducting mission planning the same way it has been done since the 1940s: on a chalkboard, whiteboard or mapboard. He decided it was time to bring mission planning into the 21st century — to digitize and automate the process. In August 2019 at AFWERX's first Spark Collider, Ralphie pitched his idea for Web-Based Information Dominant Warfare (WIDOW), an online mission planning cell tool that digitizes the mission planning process, synchronizes real-time inputs from every distributed user, creates mission products with one-click functionality, and streamlines administrative processes. His pitch won second place and was awarded $75,000 from AFWERX. Ralphie went on to spark advocacy from his leadership at the 3rd Wing and beyond, leading to the allocation of additional squadron innovation funds (SIF) to build the prototype and follow-on sustainment funds, paying for a program that is now deployed on DoD PlatformOne, and is being adopted Air Force-wide.

INTRAPRENEUR
Maj. Brad "Ralphie" Short (ralphie@widow.app) / Blue Horizons Fellow, AY21

PATH FINDERS
JBER's 673rd Contracting and Comptroller Squadrons

RESOURCES
Small Business Innovation Research (SBIR) Open Topic

ENGAGED LEADERSHIP
CSAF Gen. Charles Brown; USAF Warfare Center Commander Major General Charles Corcoran; 3rd Wing Commander Col. Robert Davis and Vice Commander Col. Shawn Serfass; 3rd Operations Group Commander Col. Matthew Bradley

SOLUTION PROVIDERS
BrainGu, Department of Defense Platform One

AFWERX

OUTCOMES

AVAILABLE AIR FORCE-WIDE
through Platform One's single sign-on function

MINIMUM 12 HOURS SAVED
per individual mission that uses WIDOW

USAF Weapons School, Neptune Series, Orange Flag, Valiant Shield, and multiple combat WGs have already adopted or will use WIDOW in its first 6 months of existence

PUBLISHED RESOURCES
Innovation backing weaves WIDOW into reality
pacaf.af.mil/News/Article-Display/Article/2293354/innovation-backing-weaves-widow-into-reality/

Ep. 9 - Ralphie Short: How customer discovery sets the foundation for successful projects
youtu.be/_eVVtamiW0Q

WIDOW: The future of mission planning ///
AFWERX Fusion 2020
youtu.be/v5AHBmyYfKA

WIDOW

Ready to Get Started

- ☐ Identify ways to engage internal teams in rapid identification of opportunities and problem areas.

- ☐ Determine your model to standardize communication of a problem to be solved (e.g. "the problem statement").

- ☐ Look for any possible disconnection between end-users, acquisition teams, solution providers, and possible solutions in your innovation network.

#9 Define Opportunities, Not Solutions

If I were given one hour to save the planet, I would spend 59 minutes defining the problem and one minute resolving it.

— Albert Einstein, Theoretical Physicist

INTRAPRENEUR | **PROJECT CHAMPION** (often an end-user) understands the problem.

The "art of the problem statement" is essential to your culture of innovation. Starting with a problem in mind, not a solution, is a discipline. **Adopting a problem statement approach will generate creative solutions that extend beyond and end-user's understanding of what's technologically feasible.**

The common tendency is to solicit proposals for a solution. This limits the range of potential innovation.

EXAMPLE OF STARTING WITH A SOLUTION

▶ *We should get a drone that folds into a 4'x2'x2' size, operates 12 hours on a single charge, weighs less than 10 lbs, carries night-vision and infrared optics.*

Crafting solicitations from problem statements opens the aperture for endless potential solutions. A Problem Statement is a concise description of an issue (Need) that an Airmen (End User) is experiencing. It identifies the gap between the current (Problem) state and the desired (Solution) state of a process or product.

EXAMPLE OF STARTING WITH THE PROBLEM

▶ *We need to see over that hill, day or night.*

Well-written problem statements can convey the end-user's need in a way that's easy to understand. Keep this in mind when targeting new potential partner/supplier entrants. Spelling out acronyms and avoiding jargon makes for clear communication.

"Though clearly conveying our needs is important, it is possible to over-prescribe a solution. If we tell companies exactly what we want them to build, rather than articulating the problem and allowing companies to come to us with their own solutions, we limit the pool of potential applicants. We also do not allow ourselves to be pleasantly surprised by solutions we did not know we needed."

— Capt. Steve Lauver, Cofounder, AFWERX/AFVentures

EFFECTIVE PROBLEM STATEMENTS HAVE THREE CORE ELEMENTS:

1. **End-User:** The person/persons who are currently experiencing this pain.

2. **Root Problem:** The issue explained in enough detail to establish why it is important.

3. **Desired Outcome:** The anticipated result of solving this problem.

Generating Problem Statements

When developing a problem statement it is important to gather relevant information from the end-user. The more details that the end-user can provide, the greater the likelihood that companies will be able to understand and respond with a creative solution.

In part, the mission of AFWERX is to improve the quality of life and capabilities of the warfighter. The team leads several initiatives across the Air Force to serve this mission by collecting and advertising Airmen problem statements. **A standard discovery process reinforces a common language across the enterprise.**

✕ Poor Problem Statement

Beginning with a potential solution, instead of the problem
▼

Using internal terms
▼

We should use **drones with specialized sensors** and the **Air Force sniffer** to determine if there is a **PSRE** chemical leak in the event of an accident.

▲
Use of Acronyms

✓ Effective Problem Statement

Clearly identified End User
▼

Root Problem
▼

Security Forces need a way to quickly and remotely **assess potentially dangerous chemical leaks without putting anyone at risk**.

▲
Desired Outcome

End-User Questions for Problem Statement Development

- What is the issue with the current way of doing things? Why is it a problem?
- How long have you been experiencing this problem?
- How often does this problem occur?
- What options have you considered in addressing this problem?
- What has stood in the way of finding a solution to this problem?

- Is the problem unique to you, or do other people experience the same problem?
- Who in the organization is most affected by this problem? Why?
- What happens if this problem isn't solved?
- How would putting a solution in place make your job/life better?

Ready to Get Started

☐ Hone in on customer discovery and the art of the problem statement.

☐ Adopt the list of end-user discovery questions for your use.

☐ Develop a worksheet or tool for your team to turn solution-focused statements into problem-focused statements.

☐ Create a training program for stakeholders to learn and master writing problem statements.

Resources

Value Proposition Design: How to Create Products and Services Customers Want by Alexander Osterwalder

"Got a Wicked Problem?" TED talk by Tom Wujec
ted.com/talks/tom_wujec_got_a_wicked_problem_first_tell_me_how_you_make_toast?

"You don't have to be an expert to solve big problems," TED talk
by Tapiwa Chiwewe
youtube.com/watch?v=OEydHbngSz0

#10 Create an Easy Target

> Any darn fool can make something complex; it takes a genius to make something simple.
>
> – Pete Seeger, American Singer

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How you go about soliciting external audiences for innovative solutions will have a dramatic effect on your success. Responding to an innovation challenge or opportunity should be straightforward for potential partners. But too often it's infamously time-consuming, confusing, and discouraging, especially for startups and new entrants.

AFWERX recognized the government process was needlessly arduous and a drag on innovation efforts. The team began experimenting early with how problem statements were released to the public. The team rebuilt the solicitation format from the ground up; the volume of proposals tripled within two years.

Though AFWERX and the Air Force utilize the SBIR program as a primary solicitation tool, the concept of the "Open Topic" can apply to any innovation program with a multitude of opportunities for partners/suppliers. Here is how AFWERX has reinvented the call for innovation:

A Bigger Target: The Open Topic

Before AFWERX and AFVentures, the Air Force posted over 150 highly detailed technical requirements documents a year for companies to comb through. These singular opportunities were launched by points of contact throughout the Air Force into a pool of partners/suppliers. This created more of a search for a "needle in the haystack" rather than a bullseye for solution providers to hit.

AFWERX made it a priority to enable more competition with more choices of innovative solutions. The goal was to increase the efficiency and transition rates. The team

got key partners including the Air Force Research Lab (AFRL) and the National Security Innovation Network (NSIN) involved in an experiment to present a single call for proposals that would bring all innovation needs together in one place. **The resulting "Open Topic" concept streamlined the solicitation process and quickly became a great success for AFWERX.**

The Open Topic positioned AFWERX to achieve a 3x increase in proposals to SBIR because it:

▶ Creates a single solution for potential partners/suppliers to find and respond more easily to opportunities.

Start Small

we want you to test your ideas

we want you to come up with a minimum viable product

we want you to test and validate your solutions

we want this to happen within weeks or months
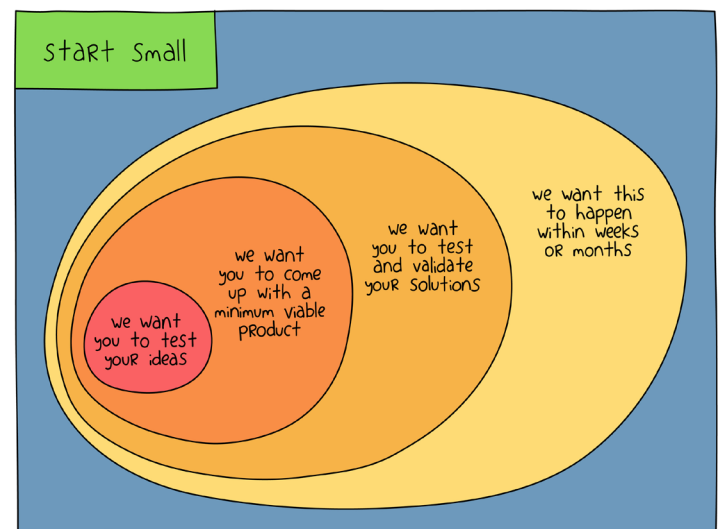
@gapingvoid

▸ Expands the area of the target for startups to propose tools and technology for focus areas or for needs that may not yet have been defined. **Welcoming proposals without a direct requirements match makes it possible to find innovation we didn't know to solicit.**

▸ Reduces bureaucracy by creating fewer points of contact and shorter timelines for proposals to be evaluated.

How it Works

Simplified Solicitations: What's the right number of topics? One. One open call for innovation attracts the largest number of high-quality proposals from qualified companies.

Key principles:

▸ Plain language

▸ Clear, concise instructions

▸ A single topic for all needs

▸ Focus areas to advertise important strategic innovation areas

▸ Open solicitations that allow companies the flexibility to propose tools and technology you may know to ask for

Nuances:

▸ Companies may submit a proposal to a Focus Area (fewer than 10 are listed) or to the open call area. In this way, Open Topics match potential AF-market demand with dual-use commercial supply to get rapid solutions to the field, and problems/opportunities are matched with many possible solutions.

> "With the initiation of open innovation topics, through work with AFWERX, Air Force SBIR contracts are being issued with unprecedented expediency.'"
>
> – Air Force SBIR/STTR Center for Excellence

▸ Though individual solicitations are a thing of the past, program offices can still advertise specific needs in an addendum section where specific problems can be explained in detail.

▸ The Open Topic is announced three times a year. The Air Force now brings over 1,000 companies under a first phase SBIR contract each year.

Simplified Requirements: Submission requirements for the Open Topic are now more in line with what a startup might use to solicit business or investment in the commercial market. Proposals can only be submitted through the main solicitation portal and standard requirements include:

▸ Concise 15-slide presentation

▸ Executive summary / 5-page technical Volume

▸ Cost Volume

▸ Company Commercialization Report

▸ Certificate of Waste, Fraud, and Abuse Training Completion

AFVENTURES SOLICITATION TIMELINE

Pre-Release (30 days before solicitation opens): The solicitation is public but companies aren't able to submit a proposal yet. Allows time for companies to ask questions about the solicitation and focus areas. Companies may contact end-users with questions specific to a focus area. The end-user can engage with them in any way they see fit (answering a simple question or digging into a specific technology).

Open Solicitation (30-day cycle, 3 cycles per year): Once the solicitation is open companies can submit proposals. Companies mainly engage through information sessions hosted by AFVentures.

Evaluation (30-45 days): Once the solicitation has closed, AFVentures assembles the team that will evaluate proposals and chooses companies that will be awarded a Phase I contract. The AFVentures team includes focus area owners throughout the process.

End-User Engagement: The Open Topic takes the end-users' interests into account through the use of Memorandums of Understanding (MOUs). Any Airman at any rank, from enlisted to officer, can sign an MOU with a company to express an interest in a particular proposed solution. This is used to signify to the acquisition team that an Air Force customer intends to work with the company to test the feasibility of a solution. (See "A Scalable Evaluation System" for more about MOUs.) For companies that have already done the first-phase work of proving feasibility and finding an Air Force customer, a "direct to phase two" option that skips the first solicitation phase is available.

Customer Support: To increase the success of the solicitation cycle, a dedicated AFWERX team is available to guide companies in developing successful proposals. The team helps them navigate legal and compliance requirements. An open "Help Line" allows companies to request assistance throughout the process.

> "This started as an experiment in bringing tech innovation from the commercial sector together with government funding in ways that hadn't been done before. The "Open Topic" concept was different from other SBIR programs because the requirement was for an application, not a specific technological area. We knew that we didn't know everything, and so wanted to develop a process by which any new idea had a chance to scale. The process, the structure, everything was experimental and had to scale. We knew we were on to something when the submission rates tripled. Now this program represents a significant portion of a $800+ million budget."
>
> – Dr. Jason Rathje, AFVentures Director, AFWERX

EXAMPLE OF OPEN TOPIC	
Phase I Open Call for Innovative Defense-Related Dual-Purpose Technologies/Solutions with a Clear AF Stakeholder Need	The AF wishes to explore innovative technology domains with demonstrated commercial value in the non-Defense sector, i.e., through existing products/solution, in order to obtain Air Force applications, i.e., Dual-Purpose Technologies/ Solutions. It is impossible to release SBIR topics addressing every AF technological area. Therefore, this topic is seeks open ideas and technologies covering topics not currently covered. It is important potential solutions have a high probability of keeping pace with the technological change. Thus, they should be closely tied to commercial technologies and solutions supporting the solution's development. This topic is meant for non-Defense commercial solutions to innovatively adapt to meet DoD stakeholders' needs in a short timeframe, at a low cost. Solutions should be focused on the three areas listed below, meeting as many as possible.

EXAMPLES OF FOCUS AREAS	
5G	Technologies enabling the 5G spectrum to increase speed over current networks, to be more resilient and less susceptible to attacks, and to improve military communication and situational awareness.
General Warfighting Requirements (GWR)	Warfighting requirements not meeting the descriptions above; may be categorized into Reliance 21 areas of interest.

Ready to Get Started

☐ Learn more about the AFWERX Open Topic at:
www.afwerx.af.mil/sbir.html

☐ Look for ways to simplify the structure of your existing or proposed solicitation process.

☐ Assess your solicitation and related communication materials for simplicity and plain language.

Resources

SBIR/STTR, "America's Seed Fund"
sbir.gov

#11 Build Trust Through Communication

Earn trust, earn trust, earn trust. Then you can worry about the rest.

– Seth Godin, Author & Entrepreneur

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Communication can make or break any relationship. Effective communication strategies will be imperative to building your reputation as a "partner of choice" for high-potential startups (and overcoming the negative sentiments about government contracting).

Communication is a strategic tool for AFWERX used to position the Air Force at the forefront of the innovation ecosystem and to earn the trust of highly competitive new partners/suppliers. Communication is infused with a customer service orientation throughout the entire engagement cycle, from the first moment a prospect learns about an opportunity to when they land a contract.

The values underpinning an effective innovation communication strategy are:

Consistency

Clear, accurate, timely, and readily available information is an opportunity to attract and exceed the expectations of innovation partners. Consistency creates a sense of predictability, trust, and security that will encourage engagement and influence opinions across the network.

Responsiveness

Receiving a timely response conveys respect, commitment, and an open line of communication for feedback, ideas and partnership.

Transparency

Giving stakeholders a sense that they are "in the know" can overcome potential skepticism about working with large entities including the government. Delivering candid information promptly implies openness and conveys accountability. And you should know, for a startup "No" is the second-best answer, so time, resources and energy can be directed to the best opportunities.

Accessible Information

If a program is successful in attracting a flood of interest, responding to every question or edge case simply will not be possible, no matter the level of commitment from the team. An accessible site with program information makes consistent, responsive, transparent communication possible at scale.

Well-Crafted Materials

Documentation to provide clear guidance, templates and examples, and so on is powerful. Deliver just the right amount at the right time and you'll be on your way to a winning plan. Keep in mind, information that is too complicated can cause further confusion.

> "There's no such thing as internal communication that's separate from external communication. The one drives the other."
>
> - James Roche, Former Secretary, U.S. Air Force

FAQs

Maintaining a Frequently Asked Questions (FAQ) database on a website or other medium that is accessible to all relevant stakeholders is a simple but effective approach. Using a system to track questions and answers that come in by email or via a website makes it easier to identify what Q&A topics should be published.

Ask Me Anything Sessions

Regular online AMA (Ask Me Anything) sessions can support the community by opening a line of communication between the organization and multiple stakeholders. This scales direct customer service and creates an added benefit of exposing stakeholders to the questions and ideas introduced by others in the network.

Community Platforms

Group messaging and community management software can be used to organize and encourage information-sharing across the network. AFWERX organizes SBIR companies into cohorts that share relevant information and feedback to improve the overall contracting experience. This also produces a multiplier effect as the answer to one question or request can reach many participants.

Internal Communication

Don't overlook your internal communication flow. Implementing internal communication tools and protocols will ensure your communications agents can find and convey accurate information to external stakeholders quickly and accurately.

Example of AFWERX SBIR Program Guides

STEP-BY-STEP INSTRUCTIONS TO GUIDE AFWERX AUDIENCES THROUGH THE SBIR/OPEN TOPIC PROCESS

Ready to Get Started

- [ ] Set a "listening period" to gain customer insights to inform your communication strategy. What do they need?

- [ ] Based on customer insights, list 3-5 ways communication could improve the overall experience.

- [ ] Develop content for your FAQ. Identify what channels would make it most accessible to startups.

- [ ] Evaluate opportunities for network communication. Is there a natural group(s) that could be organized to share information, ideas, and insights?

- [ ] Take a couple of steps to make your communications more open and transparent.

Resources

"Strategies to Enhance Air Force Communication with Internal and External Audiences" from the National Academy of Sciences
nap.edu/catalog/21876/strategies-to-enhance-air-force-communication-with-internal-and-external-audiences

AFWERX Resources Site
afwerx.af.mil/resources.html

#12 A Scalable Evaluation System

No is the second best answer. — Rick Patch, Venture Capitalist

| | P.A., CONTRACTING AND LEGAL | PATHFINDERS Core skills needed to create pathways. |

The possibility of wading through a yearslong acquisition process is likely a deal-breaker for a startup focused on commercial success. The time it takes to award contracts can make all the difference in your innovation partners/ suppliers network. **Short timelines to contract innovation "at the speed of relevance" are a distinct competitive advantage** if you can sustain them over time.

Below is a bit more about how AFWERX is transforming the evaluation process into an engine for innovation. This model can be used as you strategize a model that fits your organization.

Team Sprints

When AFWERX got started, awards took months to sort out as contracts were passed from procurement to end-users to legal and finance, and back for review. Acquiring an innovative solution sometimes took so long that the technology was no longer relevant when it reached the end-user.

The secret to changing the game while also managing a growing pool of proposals with limited staff and resources is the "coalition of the willing" that assembles during special sessions to award contracts. In the Open Topic model, these key players come together in one location for a week-long "sprint" to work side-by-side (and without the distraction of regular duties) to evaluate proposals efficiently and award contracts quickly to get solutions to the field "at the speed of relevance."

A contracting sprint may involve over 80 contract officers and buyers at one time with the goal of completing all evaluations by the end of the week. Participants bring varying degrees of finance or contracting experience. The first day is spent on training them how to use the systems, deal with certain circumstances, and handle edge cases and questions. The teams work in batches according to expertise, resolving issues on the fly.

All sprint participants are volunteers. They are motivated by the opportunity to be a part of innovation and change. To encourage interest, new participants may initially take on smaller tasks to learn the process and gain experience. If they prove to be capable, dependable, and self-reliant, the levels of responsibility increase over time.

The specialized sprint team provides an additional capability that is essential to the success of the overall innovation effort. In the past, many technologies were passed over because procurement was unable to comfortably address proposals from new non-traditional firms. Under the new process, the expertise to assess both the technology and a company's ability to perform a contract is built in. Potential partners/suppliers are no longer disqualified based solely on their startup status, thus opening the pool to more high-potential solutions.

In experimenting with the "contract sprint" format, the team has learned the following measures are important to keep the process moving quickly:

▸ **Preemptive selection.** To get ahead of issues that would slow down and have to be adjudicated during the award process, the application now includes questions to ensure companies will qualify for the program. The questions are specific to the legal requirements for Air Force contracts.

▶ **Company communication.** To ensure the team is able to resolve issues quickly, applicants are informed about the process and are asked to respond to any questions during the contracting sprint promptly; say within 24 hours.

▶ **Evaluation standards.** A scoring system brings consistency to the rapid evaluation process. A normalization process ensures scores are not artificially inflated. Protocols for conflicts of interest, say when an evaluator is on an MOU for an applicant, help to uphold standards during fast-paced sessions.

Evaluation Criteria

So now that we've seen how the special evaluation task force works, it may be helpful to share the mechanics of the evaluation process.

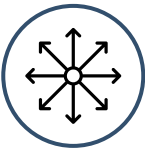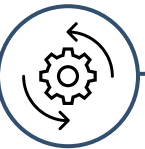AFWERX uses three criteria to evaluate every project:

1. **Technical Approach:** The company shows the solution is being used broadly, especially by other non-defense customers.

2. **Defense Need:** The company demonstrates a fit between its solution and defense stakeholders.

3. **Commercialization:** The company proves commercialization potential through existing sales revenue or private investment streams and its potential to acquire non-defense customers.

Each company is evaluated based on its merit and not in comparison to other applicants. Companies are selected as funding allows and all those meeting the minimum criteria will be awarded a Phase I contract. If selection results in more matches than can be funded, scores determine which companies are awarded contracts.

Additional tools may be used in the evaluation process. For example, applicants may use a Customer Memorandum or Memorandum of Understanding (MOU) to demonstrate interest within the Air Force market. MOUs are a formal demonstration that an Air Force customer is interested in the company's technology and it outlines the strategy for working with the customer. This additional vetting helps the proposal move faster through evaluations. MOUs are more common in the secondary contracting phases.

TECHNOLOGY READINESS LEVEL (TRL)

DEPLOYMENT	9	Actual system proven in operational environment	
	8	System complete and qualified	
	7	System prototype demonstrated in operational environment	
DEVELOPMENT	6	Technology demonstrated in relevant environment	
	5	Technology validated in relevant environment	
	4	Technology validated in lab	
RESEARCH	3	Experiment proof of concept	
	2	Technology concept formulated	
	1	Basic principles observed	

Technology readiness level (TRL) model for estimating the maturity of technologies.

Finally, a Note about Feedback

This may be the most difficult area to scale but is too important to disregard. In our experience, applicants expect and want feedback. It can determine whether a strong applicant will make adjustments and reapply. Setting expectations upfront about the amount of feedback that will be available (or not) will protect the goodwill you've created and increase reapplications rates.

It may be the case that giving detailed personalized feedback to every applicant is simply not possible. Setting up a system to convert evaluation form information into templates that can provide applicants with guidance around technical issues and regulations is useful when personalized detail is too time-consuming. This can provide the critical information and support to motivate high-potential candidates need to reapply.

To maintain relationships, companies that are not selected for contracts receive limited feedback by request. Any points of disqualification are highlighted. This may include a risk such as foreign investment, or a technicality as simple as registering the entity with the federal government in time.

> "The key takeaway is that we centralize a lot of resources and people. Traditionally something that was done in a lot of different places and piecemealed, we brought all of those contracting officers, finance folks program managers all together into one place."
>
> – Capt. Steve Lauver, Cofounder, AFWERX/AFVentures

Ready to Get Started

☐ Evaluate your existing or proposed evaluation process. What could you change to shorten the timeline?

☐ Consider your organizational capacity to evaluate proposals from startups. What additional training may be needed?

☐ Create your plan for feedback and how you will communicate about it to your applicants.

Resources

MOU Template
beta.sam.gov/opp/c02e518a995c4de299269139df88a9ca/view?keywords=%22air%20force%20sbir%22&sort=-relevance&index=opp&is_active=true&page=1

#13 Engage the Startup Ecosystem

Innovation is fostered by information gathered from new connections; from insights gained by journeys into other disciplines or places; from active, collegial networks and fluid, open boundaries. Innovation arises from ongoing circles of exchange, where information is not just accumulated or stored, but created. Knowledge is generated anew from connections that weren't there before.

– Margaret J. Wheatley

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Finding and engaging with startup community leaders, at scale, will lead you to the best startups. This, in turn, will lead you to the best solutions.

The one thing that is true across all startups everywhere is community.

Startups tend to cluster in an ecosystem where they can find the necessary resources for success. In the resource section below, you'll find some of the many books that have been written about startup communities, startup ecosystems, and their importance to the growth of the best companies.

While many local communities lack some of the hallmarks of modern startup ecosystems (Coworking Spaces, Incubators, and Accelerators) there are almost always regional groups that have a shared interest in supporting opportunities for startups and small businesses. Almost every community has some kind of economic development and chamber of commerce organizations. These groups often work in conjunction with one another, meaning that building one relationship can open the door to many others.

Fostering and building an ecosystem within the innovation economy requires patience and a long-term perspective. If done well and with a concerted effort, it will be a source of highly competitive startups and cutting-edge innovation and a force multiplier for your brand story.

Startups stand the greatest chance at success when they are part of an ecosystem in which diverse organizations and individuals share resources, connections, and support.

For AFWERX, pursuing Ecosystem Development as a formal part of the innovation strategy was an obvious decision. Reaching promising new partners/suppliers was just one of many benefits. We encourage you to explore the many ways Ecosystem Development can support your innovation goals.

Reasons to Invest in Ecosystem Development

Brand Equity: Startups are more likely to trust a program or resource if they hear about it from sources within their community. This is particularly important if your organization is faced with existing reputational challenges. Affiliating a program with trusted leaders in the innovation economy can garner validation for your "startup-friendly" program and form strong first impressions.

Fostering Innovation: When it comes to innovation, diversity determines potential. But in the government realm, as with venture capital in the commercial sector, most contracts or investments are awarded within just a few states (despite federal mandates to serve the national economy). **Building a network inclusive of different kinds of partners in non-traditional communities and regions will ensure your innovation program reaches areas often overlooked or ignored.** This network, diverse in stakeholders and geographies, will improve the quality and quantity of innovation partners. You will need to set development goals and strategies specific to the effort as diverse networks don't happen spontaneously.

Dynamic Community Engagement: Ecosystem Development can serve a variety of objectives. For example, while serving broad innovation imperatives the Air Force leverages ecosystem outreach to improve local community relations. Many installations are located in remote communities where the air base makes a significant contribution to the local economy. Reaching out to stakeholders at the local level supports positive relationships between air base leadership and the local business community. It provokes new and different ways for the air base to engage and support the local community. In Ecosystem Development strategy, consider the big picture of how community building around innovation may help you to accomplish even greater feats.

Startup Support: Local ecosystem leaders are often highly adept at identifying the local startups with the highest potential fit for the program. Often, these organizations share a mission to connect startups to opportunities. Programs with potential funding or market access are typically of great interest. For startups interested in participating in a program, these local organizations are often a prominent source of information, resources, and technical assistance.

Components of an Ecosystem Development Strategy

So what is Ecosystem Development? We think of it as the work to create connections and relationships that enable consistent engagement by and collaboration with our stakeholders.

Elements of an effective strategy include:

A "Give" – A defined value proposition or set of resources, support, and connections your organization can provide members of the ecosystem in the short and long term, defined by 'market' research and data. What are your prospective partners looking for? What's in it for them?

A Vision – A big idea about the role your organization can play in the ecosystem, its related brand story, and how your organization will add value for all its members.

AFWERX ALLIED NETWORK

WHO ARE THE ECOSYSTEM PLAYERS?

Entrepreneur Support Organizations
- Growth Accelerators & Incubators
- Entrepreneur/Tech Networking & Meetup Groups
- Media & Influencers
- Startup Competitions & Awards Programs
- Subject Matter Experts, Industry Mentors, and Field Practitioners

Investors
- Individuals & Angel Investor Networks
- Venture Capitalists
- Private Equity
- Individual Investors & Angels

R&D Institutions
- Commercialization Offices
- Research Institutions
- Universities, Colleges, Higher Education & Technical Schools

Government
- Economic Development Organizations
- Government Officials, Elected Leaders & Workforce

Companies & Individuals
- Community Organizers
- Business Leaders, Technologists & Subject-Matter Experts
- Business Mentors, Coaches & Service Providers
- Entrepreneurship Activists
- *Startups & Entrepreneurs*

A Roadmap – What tactics will you use in the first 30, 60, 90 days? What are the 3 big goals for Year 1? By Year 3?

Resources – An identifiable toolkit for leaders, strategists and operatives to leverage databases, market the program, and execute on the strategy.

Success Metrics – A set of goals and leading indicators you will use to gauge progress. This should include a plan to evaluate specific activities and results from what's under your control.

Building a Network

While some prefer a more informal structure, AFWERX recognized the need for a more structured membership program that would attract interest and encourage partners to officially join the network. So the Allied Network was created to brand the program, engage leading organizations, and tap into ecosystems across the country. The network spans traditional and non-traditional communities and stakeholders, some with a long-standing interest in national security and government contracting and some brand new to the scene.

The foundation of the Allied Network is:

1. **Member roles and benefits.** A free single-tier partnership program with explicit partner benefits and an easy sign up process.

2. **Affiliation.** Members are given the rights to use a mark/logo to distinguish the shared mission and promote their affiliation with AFWERX.

3. **Clear expectations.** The partnership program states a few specific roles and responsibilities that partners play and what they can expect from AFWERX. Members receive information on a regular basis about how to collaborate. AFWERX then seeks to provide recognition to partners that actively engage.

4. **Consistent communication.** A robust communications plan including digital, email, and event marketing keeps the membership base well informed. A member-specific mailing list receives a monthly email update with opportunities for both partners and their startup audiences.

The Role of Partners

No one travels the innovation road alone. You'll want to explore the possibilities for what partnerships may bring to your organization. Here are examples from AFWERX to inspire your thinking:

▶ Expand the circle of entrepreneurs, firms, talent, and investors interested in the challenges of maintaining national security to promote innovation.

▶ Accelerate innovation by supporting startups as they get involved in the program.

▶ Effectively and efficiently communicate with their stakeholders about opportunities and the value of the program.

▶ Support exploration, risk-taking, and collaboration within the ecosystem by contributing leadership and resources.

▶ Identify companies with potential solutions and investors with shared interests.

▶ Provide technical assistance to companies from their network or community that pursue or participate in the program.

▶ Provide feedback to improve the innovation program.

innovation requires cross fertilization between groups

@gapingvoid
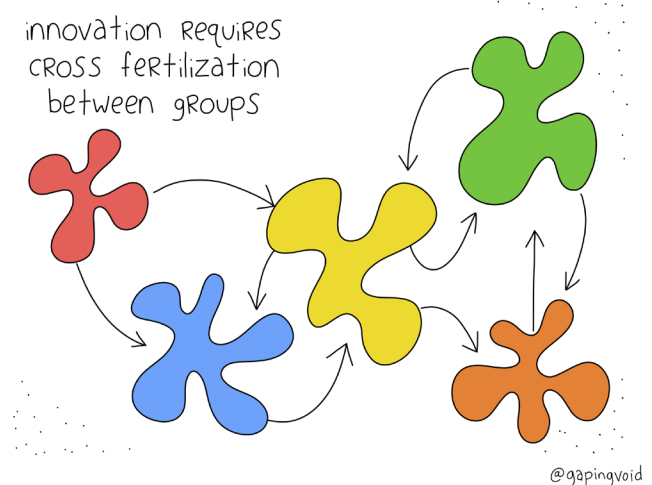
Partner Value

No partnership program is complete without a WIFM ("what's in it for me") for partners. Your WIFM is best informed by input from your prospective or existing partners about what they find most valuable. **Think of ways you can help their startup network access funding, new markets and contracts, or expertise and non-monetary resources such as testing labs.** Seeking insights from partners led AFWERX to develop a value proposition for partners that includes:

Leverage to accelerate the success of the startups they're supporting or investing in:

▶ **Early-stage non-dilutive funding** – Contracts worth up to $50K to do feasibility tests (1,000/year). Can help develop a technology using experts and labs.

▶ **Recurring revenue source** – Follow-on contracts to do trial runs and find product/market fit (300-500/year). Can help attract additional investors.

▶ **Access to the government market** – Opportunities and support to tap into the government market and earn longer-term, non-competitive contracts

Plus...

▸ Toolkits so you can be the primary source of information about our opportunities, events, and programs.

▸ Responsive support team ready to assist your startups with our programs, resources, and connections.

▸ Opportunities to highlight success stories from your startups and community and promote the impact of your partnerships.

▸ Affiliation with the Air Force and recognition, including rights to use the Allied Network mark.

How to Find Partners

A "Front Door" – A webpage dedicated to partner engagement can help capture inbound interest and serve as the place to discover the program, get information, and join the network. Be sure to include a "contact us" option to invite interest.

Dedicated Outreach – Build a database of potential partners and reach out to invite them to join your network. Sources of potential partners include: conference/event attendee lists, accelerator/incubator lists, innovation news, regional innovation ecosystem lists, past event registration lists, networking events.

Attending Conferences & Events – Having a presence at events where ecosystem leaders gather is a great way to meet and connect with new partners where they're at. Offer to contribute content, speakers, or sponsorship where possible.

Email list – A dedicated distribution list with specific plans and activities lends to targeted communication that activates the partner network. Email updates should include sample messaging and instructions they can use to share information with their audiences. Including additional resources and information can provide additional value.

Hosting Events – Opportunities specifically designed to inform, educate, and engage partners and their startups can be a worthwhile way to spark and nurture partnerships. Information sessions and innovation challenges are examples of small and large-scale formats that may interest new partners.

Facilitation & Connection – Whenever possible, involve and support your team in making connections between people and opportunities in different regions, sectors, or innovation verticals.

AFWERX Ecosystem Engagement Techniques

TRADITIONAL METHODS	INNOVATIVE METHODS
Investigation and discovery. Looking at other procurements, search engines, industry compilations (e.g., Gartner "Magic Quadrant")	**Accelerators and Venture Capital (VC) firms.** Communicating with accelerators and VCs can help predict where new capabilities may exist.
Sources Sought / Requests for Information. Written requests to industry seeking feedback on draft requirements or acquisition strategy.	**Publishing in trade-specific publications.** Most industries have trade-specific publications (e.g., Techcrunch or Wired for the technology sector) that may be a good source of communicating directly with potential industry partners.
In-person meetings or trade shows. By attending conferences, trade shows, or scheduling one-on-one meetings, you can gain deeper insights into particular companies' capabilities.	**Tech tourism.** Travel to tech hubs and, in each city, visit a handful of emerging technology companies at their offices to see how they operate.
Industry Days. By hosting public events inviting industry to learn more about government's requirements.	**Reverse industry days.** Flipping the script, reverse industry days invite industry to identify and track opportunities, pricing, preparing proposals, and various contract performance considerations to help the government shape its acquisition strategy.

Source: afwerx.af.mil/resources/Innovation Handbook.pdf

Measuring an Innovation Network

Finally, you'll want to know what outcomes you expect to achieve from your Ecosystem Development work. Your network can deliver real returns when goals are defined, measured, and evaluated. There are many possible metrics, of course. We focus on:

▸ **Awareness/Interest.** Increase in number of partners, subscribers, attendees, or applicants toward specific goals for overall composition and reach.

▸ **Innovation/Solutions.** Number and variety of ideas submitted, solutions funded, networks engaged, additional investment attracted.

▸ **Diversity.** Level of participation by geographic location and other socioeconomic measures relevant to federal programs, e.g. race and gender.

▸ **Awareness/Interest.** Increase in number of partners, subscribers, attendees, or applicants toward specific goals for overall composition and reach.

▸ **Innovation/Solutions.** Number and variety of ideas submitted, solutions funded, networks engaged.

▸ **Diversity.** Level of participation by geographic location and other socioeconomic measures relevant to federal programs, e.g. race and gender.

Ready to Get Started

- ☐ Map your ecosystem stakeholders.

- ☐ Prioritize 3-5 key groups of stakeholders for outreach/development. Look for a few potential contacts in each group.

- ☐ Draft a vision and purpose statement for your network. Include goals and roles for members.

- ☐ List ways to diversify your partnerships based on the audiences they reach. Include a few partners to reach underrepresented communities (for example, target specific socioeconomic or racial groups, geographic areas, or women).

- ☐ Define what success looks like. Create a plan for how you will measure it.

- ☐ Develop "rules of engagement" to guide partner participation.

- ☐ Develop a partner communications plan for the next 3, 6, and 12 months.

Resources

"The 4 Questions and the 10 Rules" from Strategic Doing
strategicdoing.net/4-questions-and-10-rules/

"Why Your Organization Needs an Innovation Ecosystem" by Osterwalder, et al. in Harvard Business Review
hbr.org/2019/11/why-your-organization-needs-an-innovation-ecosystem

The Startup Community Way: Evolving an Entrepreneurial Ecosystem by Brad Feld and Ian Hathaway

The Rainforest The Secret to Building the Next Silicon Valley by Victor Hwang and Greg Horowitt

#14 Tell the Story

Stories are the most powerful form of human communication.

– Peg Neuhauser, Author, *Corporate Legends and Lore*
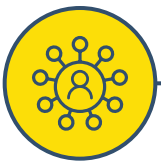
ENGAGED LEADERSHIP | **ORGANIZATIONAL WILL** ensures solutions will be deployed and transferred.

Storytelling and communicating the "why" behind your mission will reinforce your relationship to the organization and your stakeholders, community, and startups. Sharing the story behind your innovation program and why it matters motivates stakeholders to share in the innovation mission. It is a tangible way to empathize with stakeholders, build relationships, and inspire sustainable change.

What makes a story effective depends on the intended outcome. From the early quick wins to the revolutionary solution, storytelling is the narrative that weaves together the facts, values, and emotions your innovation brand is meant to evoke.

AFWERX learned early on the importance of communicating all along the process. Storytelling is used at all levels of innovation, from the field to top command, to build the new culture of innovation for the Air Force.

Managing the change in culture and processes using storytelling has helped AFWERX advance its innovation strategy. It is used to build the awareness, motivation, and

"When a company has a bad experience, they tell their friends, colleagues, investors, and families, which creates a negative cycle. Reversing that sentiment takes time and deliberate focus on giving those companies that take a risk on us a good experience, but it is worth it! We have been fortunate to see that trend reversed in just three years. As of this writing, some of the best startups in the world are choosing to work with us, and some of the best investors in the country are encouraging their portfolio companies to do the same. The battle is never over though — this is just the beginning."

– Capt. Steve Lauver, Cofounder, AFWERX/AFVentures

understanding required to shift behaviors and get buy-in for even the most daunting of undertakings. By making it a priority, the team is able to execute on communications plans to reach each target audience.

In its simplest form, AFWERX developed its strategy in five steps:

1   **Background**

What is the purpose of the organization? What is the current state of the organization, and where is the organization trying to go?

2   **Communication Objectives:**

What are you trying to communicate and why? It is always best when you can link communication objectives to your organization's lines of effort to illustrate the efforts that you are supporting.

3   **Audiences:**

Who are you communicating to? Be as specific as you can. If your audience has sub-audiences who care about different things, list them out. Think about your audience. For messages to be effective, you first have to know your audience. What do they care about? What problems do they face? How can your organizational network help them solve those problems?

4   **Messaging & Call to Action:**

What messages do you want each of your audiences to take away from your communication? A message should evoke an emotion, a reason why they should care. Always ask yourself, "So what?" To craft messages that resonate with your audience, you have to know what makes them tick. Some messages will resonate with multiple audiences, some will be more audience-specific. It is helpful to have a mix of both for a full messaging toolkit.

5   **Tactics and Platforms:**

Many different platforms can be utilized to reach the startup ecosystem. Figure out which platforms your target audience gets its information from and which are best suited to convey your message.

▸ Examples of Tactics and Platforms for AFWERX: website, press releases, Air Force news stories, blogs, monthly newsletter, monthly senior leader update, speaking engagements, messaging and workspace platforms (Slack, Union, IdeaScale), blogs (Medium), videos, infographics, ads, email campaigns, and social media (Facebook, Twitter, Instagram, LinkedIn, YouTube).

AFWERX SUCCESS STORIES

An example of storytelling that combines facts and emotion to influence behavior and evoke a response related to innovation, AFWERX releases success stories that demonstrate the impact of specific innovation projects. This example is used to encourage Airmen and leadership to engage in the innovation program.

HUSH HOUSE

VR training for Engine Test Stand

In December 2018, Maj. Anthony "Wedge" Bunker showed up to the AFWERX-Austin Spark Summit with no idea what AFWERX was or how to leverage new tools and methods for innovative projects. Following a few more events and an in-depth discussion with Lt. Col. Jorge Manresa, RAPIDx Director, the newly-formed Dyess Spark Cell decided to tap into these new opportunities like the Small Business Innovation Research (SBIR) Open Topic program. In January 2019, the team hosted Global Strike Command's first Collider at Dyess Air Force Base, Texas, resulting in three 18.3 Phase IIs including one with Spectral Labs to develop a virtual reality training system for the Engine Test Stand (aka "Hush House"). Rapid iteration prototype testing and feedback sessions ensued from June to July 2020 before testing the new VR system as Matt Hayden, program manager, passed his Engine Run Certification with flying colors.

INTRAPRENEUR
Maj. Anthony "Wedge" Bunker, Dyess Spark (wedge.bunker@afwerx.af.mil)

RESOURCES
Small Business Innovation Research (SBIR) Open Topic

SOLUTION PROVIDERS
Spectral Labs

ΛFWERX

OUTCOMES

Reduces training timeline from
6 MONTHS
to
2 WEEKS

Saves
$768K
per student

Will save USAF
$4.6M
a year

PUBLISHED RESOURCES
Dyess maintainers showcase training with VR
dyess.af.mil/News/Features/Article/2304365/ dyess-maintainers-showcase-training-with-vr/

facebook.com/watch/?v=218562372849062

HUSH HOUSE

Ready to Get Started

- [ ] Define your audience, their needs, and why they should care about your big idea.

- [ ] Use the five-step plan to develop your strategy.

- [ ] Consider ways to make storytelling a core value throughout your innovation strategy.

- [ ] Plan how you will track and share stories of innovation with your audiences.

Resources

Start with Why: How Great Leaders Inspire Everyone to Take Action by Simon Sinek

The Art of Storytelling: Easy Steps to Presenting an Unforgettable Story by John Walsh

For More Info & To Get Involved

Learn more about **AFWERX**
afwerx.af.mil

Learn more about the **Air Force SBIR/STTR program**
afsbirsttr.af.mil

Learn more about **Established, startup communities and building an Innovation Ecosystem**
established.us

Join the **AFWERX Allied Network**
afwerx.af.mil/allied-network.html

We welcome your feedback and ideas about this **Playbook**.
Please email us at:
alliednetwork@afwerx.af.mil
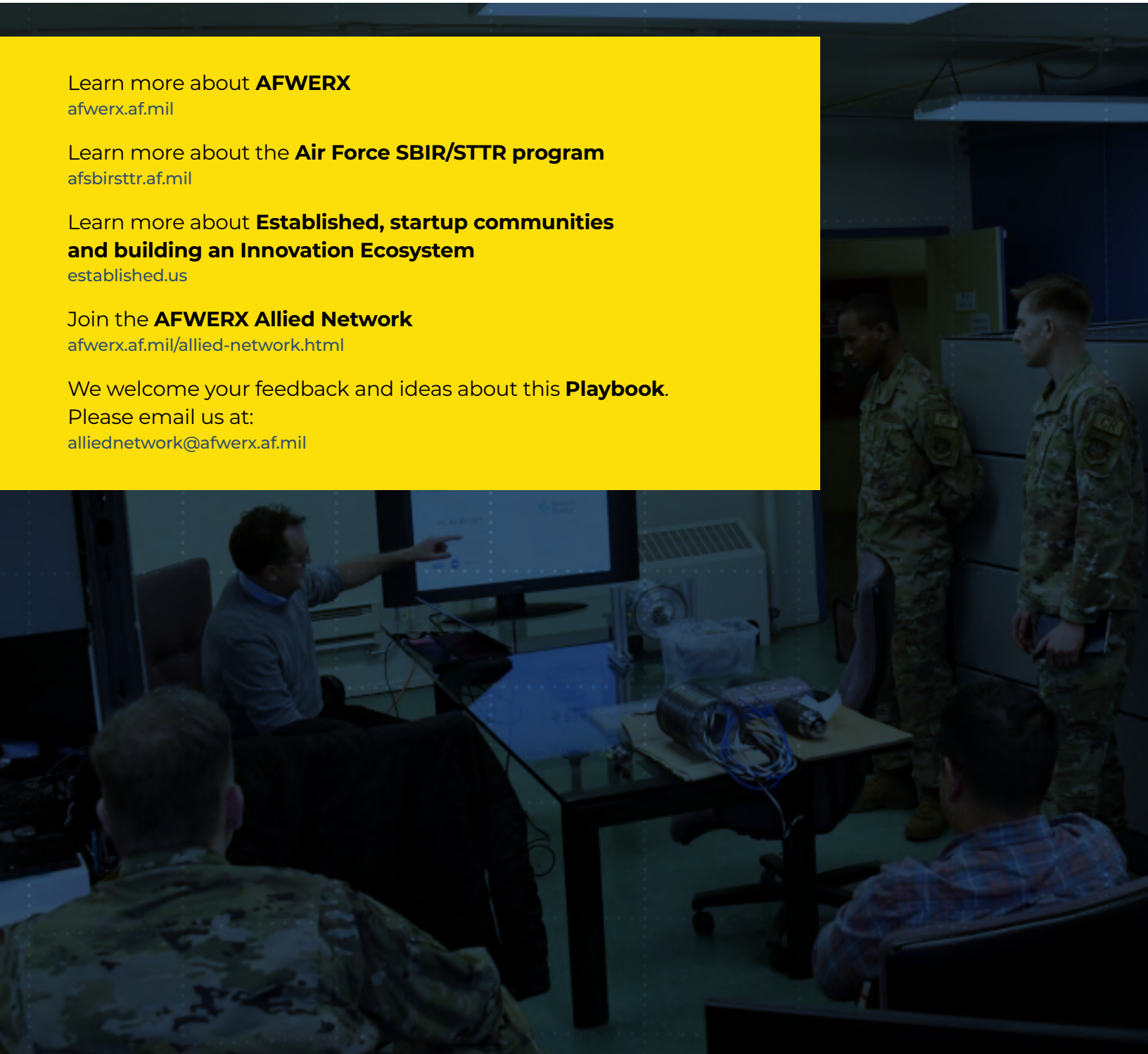
Glossary

AFRL
A scientific research organization of the Air Force that leads the discovery, development, and delivery of warfighting technologies for air, space, and cyberspace forces. AFWERX became a part of AFRL in 2020.

AFWERX
The innovation catalyst of the U.S. Air Force, AFWERX is expanding technology, talent, and transition partnerships for rapid and affordable commercial and military capability. Organizationally, AFWERX has three efforts to foster a culture of innovation within the service: AFVentures, Spark, and Prime.

AF VENTURES
The commercial investment arm of the Air Force, AFVentures creates pathways for commercial innovators and private capital investment to help the Department of the Air Force solve problems.

AIRMEN
The term for a member of the air force of a nation's armed forces.

DoD OSBP
Office of Small Business Programs is responsible for the overall management of the DoD SBIR|STTR Programs. The DoD SBIR|STTR Program Office is responsible for interfacing with the services, defense agencies, SBA, and Congress regarding SBIR|STTR.

DSIP
The Defense SBIR/STTR Innovation Portal integrated with Login.gov is the SBIR/STTR submission website for all DoD agencies. It includes a compendium of frequently asked questions, tutorials, and templates to guide a company through the process.

ECOSYSTEM DEVELOPMENT
The work to create the conditions to accelerate innovation and entrepreneurship by expanding access for individuals, firms, and communities to find and maximize relevant resources and networks.

SAF/SB
Monitors the Air Force SBIR/STTR Program and leverages program results and relevant technologies developed by small businesses, to meet prime and subcontracting goals, when appropriate.

SBIR/STTR
The Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs of the SBA are "highly competitive programs that encourage domestic small businesses to engage in Federal Research/Research and Development (R/R&D) with the potential for commercialization. Through a competitive awards-based program, SBIR and STTR enable small businesses to explore their technological potential and provide the incentive to profit from its commercialization."

Small Business Administration (SBA) is the assigned Federal administration responsible for the SBIR/STTR programs. The SBA sets forth policy for the general conduct of the programs within the Federal Government.

SPARK CELLS
An AFWERX program to help connect Airmen through a decentralized network of innovation hubs on Air Force bases around the world. Each Spark Cell operates semi-autonomously in pursuit of locally generated ideas and projects.

STARTUP
"A temporary organization in search for a repeatable and scalable business model," according to Steve Blank, founder of the Lean Startup movement.

#InnovativeAF

Join the Allied Network
afwerx.af.mil/allied-network

AFWERX